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THE KINETIC DRIVE

ITS PHENOMENA AND ITS CONTROL *

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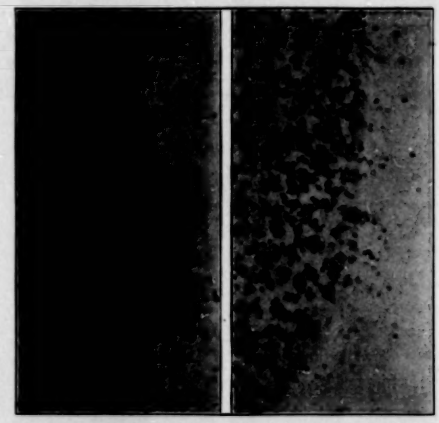
INTRODUCTION

The species of animal now dominating the earth more completely than any other is at this moment in a state of abnormal activity — the back-wash of the European war is seen in the quickened pulse everywhere even in this land. Not only in war, but in peace also, the complicated machinery of civilization created by man often drives him to his own destruction. Nowhere is this industrial and commercial driving more intense than in this city. It has occurred to me, therefore, that it might be interesting to attempt an analysis of the mechanism by which this speeding is accomplished, and relate it to the speeding which is due to other stimuli such as infections, autointoxication, physical injury, etc. Since the process of speeding is identical with that of the transformation of potential into kinetic energy, the state of increased energy transformation might fittingly be called the *kinetic drive*. To facilitate discussion I shall assume an unwarranted attitude of dogmatism which may be evaluated at leisure.



A.—Section of normal cerebellum of rabbit.

B.—Section of cerebellum of rabbit showing effect of extreme emotion (fright).

Fig. 1.—Photomicrographs showing effect of fright on the brain cells of a rabbit. Note the almost complete disappearance of Purkinje cells in *B*.

THE KINETIC MECHANISM

Man is a mechanism, an automaton, whose primary work is the transformation of energy by means of a system of organs especially adapted to this end. In these organs during sleep is stored the energy which during consciousness, in response to environmental contacts with distance, contact or chemical ceptors, is transformed into muscular action, into heat or into the representations of muscular action, such as emotion or "mental processes."

The impulse or driving force, which causes the transformation of energy within the organism, is supplied by certain parts of the brain, and in the brain is found also the mechanism which makes the final manifestations of the transformed energy specific to the environmental contact which initiated the driving.

The initiators of the kinetic drive may be roughly classed as *contact ceptor stimuli* — physical injury, heat, cold, etc.; *distance ceptor stimuli* — written and spoken language, sight, smell, etc., and *chemical ceptor stimuli*—infection, autointoxication, pregnancy, excessive food, poisons, etc. Whether or not any one of these stimuli acts singly or in combination with others, the end-effects are identical. The effects of any one, therefore, may be studied as typifying all the rest.

The organs, which from moment to moment vary and control, accelerate or retard the driving force of the brain are the suprarenals, the pacemaker of the kinetic system is the thyroid, and the final act of adaptive energy transformation is performed by the muscles.

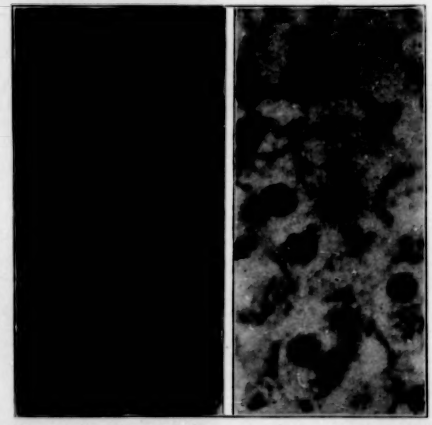
The primary process within the brain, by means of which its driving force is created and sustained, is oxidation. Oxygen is supplied by the lungs. If the blood be acid, oxygen cannot be carried by the hemoglobin. Energy transformation depends, therefore, on the maintenance of the alkalinity of the blood. Since the transformation of energy in the body is always accompanied by the formation of acid by-products, the continuance of the process of energy transformation demands a mechanism or mechanisms by means of which the acid by-products can be neutralized and eliminated. These needs are met by the liver, the kidneys and the lungs. The acid by-products of energy transformation are to a large extent broken down in the liver into simple compounds which are harmless to the kidneys by which these soluble end-products are

* Wesley M. Carpenter Lecture, read before the New York Academy of Medicine, Oct. 7, 1915.

eliminated; while the gaseous end-products are eliminated by the lungs.

If the system of organs, which we postulate is primarily adapted for the transformation of energy, acts as a *unit* and is restored only during sleep, then every excessive excitant of muscular action or of heat production between periods of sleep — such as prolonged consciousness (insomnia), muscular action, emotion, mental exertion, infection, foreign proteins, even pregnancy, etc., should cause identical changes in the histologic structure and the function of each organ concerned in the transformation of energy or in the neutralization and elimination of the resultant acid by-products; and in addition, intense and short, as well as long continued activation by any one of these agents should cause also identical acute and chronic diseases. In other words, insomnia, intense emotion (Figs. 1, 2 and 3), extreme exertion, infection, foreign proteins, pregnancy, etc., should cause histologic changes in the brain, the suprarenals and the liver, an increased output of adrenin, hyperplasia of the thyroid and a change in its iodin content, and changes in the glycogen content of the muscles and of the liver.

If the foregoing be true, then it would follow that each of these activators would cause an increased production of acid by-products. Therefore, exertion, infection, emotion, mental activity (increased consciousness) and foreign proteins or pregnancy should produce certain identical clinical phenomena. First of all, we know that each of these activators causes increased respiration, increase in the frequency and force of the heart beat, thirst, excitability, perspiration, increased acidity of the urine, and identical manifestations of fatigue and exhaustion. If the suprarenals determine the driving force of the brain from moment to moment, and if each activation of the *kinetic system* causes an increased output of adrenin, then it would follow that adrenin alone would produce the basic phenomena caused by an excitant of energy transformation — such as exertion, injury, infection, emotion, pregnancy, etc., and would produce identical histologic lesions; and it does. In addition, adrenin given over a long period of time causes myocarditis, glucosuria, albuminuria, fatigue and in addition many symptoms of cardiovascular disease and of cardiorenal disease.



A. — Section of normal suprarenal of rabbit.

B. — Section of suprarenal of rabbit showing effect of extreme emotion (fright).

Fig. 2.—Photomicrographs showing effect of fright on the suprarenals of a rabbit. In *B*, note the widespread loss of cytoplasm and the disappearance of nuclei.

FUNCTION OF THE SUPRARENALS AND OF THE THYROID IN THE KINETIC DRIVE

If adrenin causes phenomena identical with those produced by emotion, exertion, infection, etc., and if, vice versa, emotion, infection, exertion, etc., each causes an increased output of adrenin, then we may infer that it is through the increased mobilization of adrenin that increased energy transformation is accomplished by each of these activators. Again, if this be the rôle of adrenin, we should find that in a state of suprarenal deficiency, the manifestation of energy transformation would be diminished. And we find that this is true, for after double suprarenalectomy, there is an increasing and finally a total loss of muscular power and of heat production.

If the nerve supply of the suprarenals is divided and then an adequate suprarenal stimulus applied, the output of adrenin is not increased. If the nerves are intact and a large dose of morphin has been given, the application of an adequate suprarenal stimulus causes no increased output of adrenin (Figs. 4 and 5).

We therefore conclude that the brain controls the transformation of energy by first driving the suprarenals, thus mobilizing adrenin, which is carried to the brain in the blood stream. The result of the chemical combination of oxygen, adrenin and brain cell substance appears to be the production of energy impulses, these impulses being probably identical with electricity (Crehore and Williams). The electromotive force thus supposed to be fabricated in the brain is transmitted to the muscles, where the energy is finally transformed into heat, running, fighting, etc. Since the suprarenals hold but a limited supply of adrenin, one would expect to find in the body some organ whose function is the secretion in abundant quantity of some substance by which the efficiency of adrenin is increased. The belief that this function is performed by thyroid secretion is strengthened by the researches of Osterhaut, who found that iodin causes an increased permeability of living vegetable tissue to the passage of electricity. The activity of thyroid secretion is directly proportional to the amount of iodin it contains, and we know that excessive doses of iodin alone cause all the phenomena of emotion and exertion, and, inversely, that emotion, infection, exertion, etc., cause changes in the iodin content of the thyroid. If, in the midst of iodism, double suprarenalectomy be performed, the phenomena of iodism should be diminished.

In this interrelation of the brain, the thyroid and the suprarenals, we have what perhaps is the master key to the automatic action of the body; that is, through the special senses environmental stimuli reach the brain and cause it to liberate energy, which in turn activates certain other organs and tissues, among which are the thyroid and suprarenals. The increased output of thyreoiodin, by facilitating the transmission of electric currents through semipermeable membranes, increases the passage of nerve impulses and sets the

pace for energy conversion. In consequence the suprarenals are driven to increased activity, and the increased adrenin in turn excites the brain to still greater activity, the results of which are equivalent to increased work of the sympathetic nervous system. These results are principally the following: increased heart beat, increased respiration, raised blood pressure, increased sweating, thirst, the transfer of much of the blood from the splanchnic area to the surface, increased output of glycogen, increased power of the muscles to metabolize glycogen, increased acid excretion in the urine, certain histologic and chemical changes, and exhaustion.

The phenomena of the kinetic drive in animals and in man are therefore essentially the phenomena of the kinetic drive of a locomotive. The locomotive consumes carbon in the form of coal; man consumes carbon in the form of glycogen. The locomotive produces heat and motion; man produces heat and motion. The locomotive produces gaseous and solid acid by-products; so does man. If the exchange of gases in the firebox of a locomotive is stopped, energy transformation ceases — the locomotive dies; if the exchange of gases in man is suspended, man ceases to transform energy — man dies.

CONTROL OF THE KINETIC DRIVE

Turning from the phenomena of the kinetic drive to methods of control, we find first that morphin controls the rate of energy transformation in response to any stimulus. Whatever the activation, whether infection, emotion, injury or exophthalmic goiter, morphin controls the outward phenomena, such as the pulse rate, respiratory exchange, sweating, thirst, restlessness, acid excretion, fever, muscular action and pain.

A.—Section of normal liver of rabbit.

B. — Section of liver of rabbit showing effect of extreme emotion (fright).

Fig. 3.—Photomicrographs showing the effect of fright on the liver of a rabbit. In *B*, note the vacuolated spaces and other signs of disorganization.

The value of opium in infections and in pain is one of the foundation stones of medicine. And here I must pause for a moment to pay tribute to a talented New York physician — Alonzo Clark — who on empiric grounds made a daring innovation in the opium treatment of peritonitis.

Even today we must concede that next to surgical treatment the administration of opium is the most efficient treatment for peritonitis. Guided by researches made in my laboratory, in collaboration with my associates, I have combined the administration of opium with surgical treatment in only those cases of peritonitis in which the kinetic drive threatened to kill the victim. In such cases a quick *anociated* operation under nitrous oxid, Fowler's position, huge hot packs, saline infusions, sodium bicarbonate and glucose, plus the Alonzo Clark opium treatment for from twenty-four to forty-eight hours have given startlingly good results. Opium blocks the kinetic drive; draining relieves tension; water and alkalies control acidosis, and the patient gets well. Death from acute peritonitis from any cause has all but disappeared from the Lakeside Clinic. The amount of opium must be determined not by quantity but by its effect on the drive; the respirations should be reduced to from 12 to 15 per minute. In severe cases there must be no therapeutic faintheartedness.

The final test of any theory in medicine is in the crucible of the clinic. Our laboratory findings support not only the kinetic theory, but also the postulate that the kinetic drive may be controlled by the use of morphin, nitrous oxid and alkalies. In the laboratory we have found that morphin prevents the mobilization of adrenin (Figs. 4 and 5); that morphin and nitrous oxid block energy transformation, and prevent the histologic changes wrought by physical injury, infection and emotion (Figs. 6, 7 and 8), and that alkalies counteract the effect of a kinetic drive by supplying the rapidly increasing deficiency of neutralizing bases. These laboratory findings have been tested in Lakeside Hospital in a long series of operations on the stomach and the intestines, on the biliary tract, the pelvic organs and the appendix, in clean cases and in cases complicated by the severest acute infections, with a resultant remarkable reduction in both morbidity and mortality.

The excessive energy transformation caused by physical injuries such as blows, crushes, penetrations, surgical operations, etc., like that caused by infection, may be blocked by morphin and nitrous oxid and the effect minimized by alkalies and water, and as in the infections, the dosage should be proportional to the intensity of the activation. In surgical operations the brain may be insulated — and in consequence its driving power prevented by local anesthesia in the surgical field or by blocking the spinal cord or the nerve trunks communicating with the field. While it is safe to block the kinetic drive by morphin in cases of acute injury or of acute infection, it is unsafe to use opium to block the effects of intense emotion, because of the danger of habit formation. The tendency to habit formation, however, is the strongest possible evidence of the power of morphin to control the kinetic drive. The emotional drive with its consequences, identical with the consequences of infection, exertion or physical injury, is best met through training and education leading to a philosophy of life that insulates the indi-

vidual against destructive psychic stimuli. Thus may the individual be anociated in the large clinic of life just as, through local anesthesia, the patient is anociated against the drive of the surgeon's knife.

Never before has there been such an opportunity for studying the behavior of the human mechanism under the strongest physical and psychic stress as in warring Europe today. There observations of the injured, of soldiers in the field, of prisoners and of refugees gave me an unparalleled opportunity for

Fig. 4.—Tracing which, with Figure 5, illustrates the protective effect of morphin in anaphylactic shock (Cannon test). In this tracing it is shown that the adrenin which appears in the blood as a result of anaphylaxis inhibits the contractions of the intestinal muscle. *A*, 5 c.c. blood added from dog before anaphylactic dose was given; *B*, 5 c.c. blood from dog in anaphylactic shock; *C*, 5 c.c. blood added from anaphylactic dog, after standing twenty-five minutes.

studying the human kinetic drive on a vast scale. The illustrations show the gross effect of the combination of extreme emotion and exertion as they are manifested in the facies and bearing of Belgium refugees and of wounded soldiers, while the photomicrographs show the effect on the brain, the suprarenals and the liver of some of the kinetic stimuli to which these men had been subjected (Figs. 9, 10, 11 and 12).

THE CHRONIC KINETIC DRIVE

Turning now from the individual acutely driven by injury, by infection, by emotion, let us consider the individually *chronically* driven by the stimuli of want, ambition, anger, jealousy or grief, by infection, by pain and by autointoxication. In the acute kinetic drive the individual is endangered by death from exhaustion or from acid intoxication, whereas in the chronic drive, the danger is that one or another of the overdriven organs or tissues may be permanently injured. In an acute drive, simple and direct control is possible; in a chronic drive we may encounter the added difficulties of pathologic changes in one or more organs or tissues. I shall, therefore, discuss separately methods of control in those cases of chronic drive in which no organic change exists and in those in which organic changes do exist.

The common chronic drives are mental and physical overwork, chronic infections, excessive diet and pregnancy, the emotions of fear, hate, jealousy, shame and despair, and foreign proteins, as in intestinal stasis. These conditions prescnt every-day problems and demand but little discussion. Since the lesions of these various driving causes are the same, however; since infection, emotion and overwork produce identical end-effects; since usually two or more of these operate simultaneously, and since the emotional states are most amenable to control, it becomes obvious why these conditions have often been controlled by means which have apparently no direct therapeutic value, such as faith in the physician, travel, diversion, prayer, healing springs, philosophy and Christian Science. Again and again, in the domain of regular medicine as in the domain of irregular medicine, the exclusion of worry has relieved the drive sufficiently to allow the body processes to overcome the primary disease. But the reverse is true also — innumerable men, under the strain of a chronic drive, are pushed beyond the narrow limits of safety by the added drive of grief, worry or shame. Is it not possible that when it is understood that the various kinetic stimuli have interchangeable physical values, the game of health will be more skilfully played? Incidentally, the chronic drive presumes a mild chronic acidosis — at least. This, as Lawrence Henderson suggests, might be in part counteracted by alkalies and water.

Passing now to that group of individuals whose organs have become affected by excessive energy transformation, we meet our greatest difficulties. The proper prosecution of this theme would mean an extensive work on medicine. I shall therefore give but a few illustrations.

EXOPHTHALMIC GOITER

First of all, perhaps the most typical of the kinetic diseases is exophthalmic goiter. In exophthalmic goiter the kinetic system is driven by a continuous activation, because in this disease there has been established a pathologic interaction between the brain and the thyroid, whereby the threshold to all stimuli is kept continuously low. Exophthalmic goiter exhibits a progressive alteration in every function of the body, leading eventually to exhaustion, with visible lesions, depending on the duration and severity of the disease, in every organ and tissue of the body, not alone in the brain, suprarenals and liver, but also in the heart and blood vessels, the muscles, the thyroid, the thymus, the pancreas, the spleen, the lymphatics, the

Fig. 5.—Tracing which, with Figure 4, illustrates the protective effect of morphin in anaphylactic shock (Cannon test). This tracing shows that the injection into a morphinized animal of beef serum, which in the normal animal would have caused a strong anaphylactic reaction and a greatly increased output of adrenin, causes no increased output of adrenin, as is evidenced by the contractions of intestinal muscle as in normal blood. Since morphin acts directly on the brain, this experiment evidences not only the protective effect of morphin, but also the dependence of the suprarenal on the brain for its activity. *A*, 5 c.c. control blood added from dog; *B*, 5 c.c. blood added from dog five minutes after intravenous injection of 15 c.c. beef serum; *C*, a few drops of pure adrenin added.

skin, the skeletal muscles, the teeth, the hair and the bony skeleton. Extreme and protracted exhaustion from excessive exertion, excessive emotion or chronic infection causes similar lesions.

In other words, the principal phenomena of exophthalmic goiter are identical with the leading phenomena

of any other kinetic drive of a corresponding degree of intensity, and may be duplicated by fear, anger, sexual excitation, physical exertion, overwork or acute infection. Conversely, many of these activations cause hyperplasia of the thyroid. Thus fear, anger or sexual emotion may cause temporary enlargement of the thyroid; there is hyperplasia of the thyroid in pregnancy, in chronic infections, and perhaps in intestinal autointoxication as well.

There is a fundamental resemblance between certain aspects of exophthalmic goiter, of iodism, of suprarenalism, of emotion and of infection. The resemblance so often noted between exophthalmic goiter and excessive emotion is not surprising in view of the frequency with which the disease is traced to an emotional origin; for among the stimuli initiating exophthalmic goiter, protracted emotion is, perhaps, the most dominant. In a majority of cases, careful inquiry will disclose some deeply entrenched disturbing emotional factor — a great grief, the existence of harassing home conditions, poverty or shame, business reverses, overwhelming responsibilities, an unhappy love affair, or some acutely distressing thought, which drives the kinetic system incessantly. In my own experience, in cases of exophthalmic goiter, for the causation of which no factor in the external environment can be held responsible, the internal environment has usually supplied the disturbing factor, infection or autointoxication, for example. I have never known a case of exophthalmic goiter to result from hard physical labor, unattended by "psychic" strain, or from energy voluntarily and naturally expended.

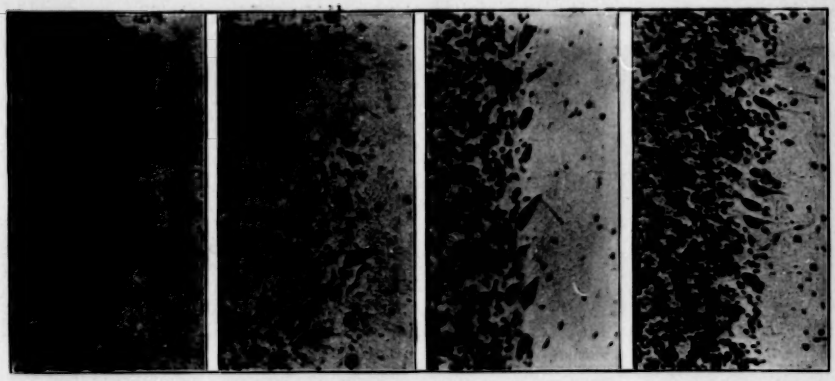
Whatever the exciting cause of exophthalmic goiter, however, whether unusual business worry, disappointment in love, a tragedy, a strong fear, the illness of a loved one, intestinal autointoxication, an acute or chronic infection, or the administration of excessive doses of iodin or thyroid extract, the symptoms are identical and closely resemble the phenomena of one of the great primitive emotions.

INFECTION

There is a period of excessive kinetic drive in fever which exactly corresponds to the kinetic drive in emotion, and which signifies the preparation of the organism for self-defense by chemical activity, just as emotion signifies the preparation of the organism for self-defense by motor activity. The evolution of a receptor mechanism for foreign proteins may be explained on the ground that only by oxidation is the body able to split up and eliminate foreign proteins. The one method of inducing oxidation is through the kinetic system. The living protein molecules of the body are more resistant than the foreign protein molecules, and hence the body is purified by fire — by oxidation.

It would seem, therefore, that fever is the result of a driving of the kinetic mechanism by an infection (foreign protein) stimulus for purposes of self-defense by the splitting up of the molecules of the foreign protein through the transformation of latent energy into heat; and it would seem that emotion is the result of a driving of the same mechanism by a psychic stimulus for purposes of self-defense or procreation, in part at least, by muscular action; while exophthalmic goiter is a purposeless driving of the mechanism by some obscure disarrangement connected with a pathologic change in the function of the thyroid.

Reasoning from the secure facts of the clinic and the less secure data of the laboratory, I conclude that the primary lesion of exophthalmic goiter is the establishment of an abnormal facility for the passage of action currents in the central nervous system. As previously stated, Osterhaut has given us definite data as to the effect of iodin on the electric permeability of skelp. There is evidence on a vast scale that such a state of increased electric permeability exists in exophthalmic goiter. It has been stated that electric currents are increased in the skin of patients with exophthalmic goiter. Exophthalmic patients are extremely sensitive to all stimuli, infection, autointoxication, injury, emotion and electricity.



A.—Section of normal cerebellum of a dog.

B.—Section of cerebellum of a dog after injections of diphtheria toxin.

C.—Section of cerebellum of a dog after injections of diphtheria toxin plus morphin.

D.—Section of cerebellum of a dog after injections of diphtheria toxin and the continuous administration of nitrous oxid for four hours.

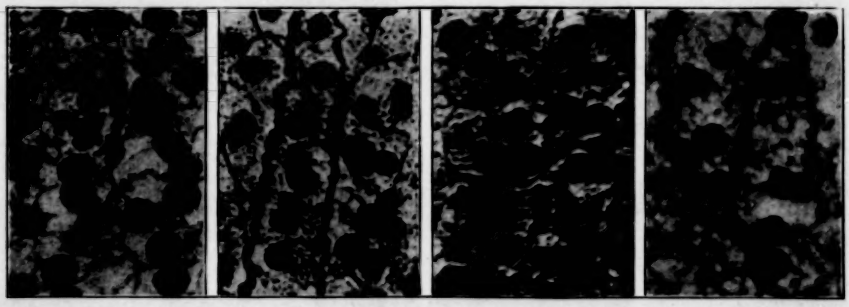
Fig. 6.—Protective effect of morphin and of nitrous oxid on the brain cells of dogs which had received injections of diphtheria toxin. Compare the Purkinje cells in *C* and *D* with the disintegrated hypochromatic cells in *B*.

That these several activations involve the same mechanism is borne out by many points of similarity between exophthalmic goiter and infections. The likeness of the phenomena of the kinetic drive in exophthalmic goiter to those of chronic infections, particularly of tuberculosis, is so marked that it is not at all uncommon to find diagnosticians of wide experience recommending treatment for tuberculosis to a patient with exophthalmic goiter, and an operation for exophthalmic goiter to a patient with tuberculosis. In two different cases of the same degree of intensity, it may be almost impossible to distinguish the case of exophthalmic goiter from the case of tuberculosis. Sometimes the two conditions may be present in the same patient. The following symptoms are common to both exophthalmic goiter and tuberculosis: tachycardia, increased respiration, flushed face, tremors, persistent slight fever, nervousness, rapid loss of weight, digestive disturbances, increased acid secretion of the urine, hyperplasia of the thyroid and of the lymph glands and enlargement of the heart. Even at necropsy the lesions — barring the tuberculosis focus itself — may be so nearly identical in the two cases as to baffle differentiation. In tuberculosis as in exophthalmic goiter, the entire kinetic system is overdriven.

Thus the kinetic theory of exophthalmic goiter, of infections and of emotion supplies a possible biologic interpretation of the induction of these states, of their mutual resemblance, and of the method of their control. All are modified by rest; all are temporarily controllable by morphin; all cause increased H-ion concentration in the blood, and, therefore, tax heavily the organs of acid neutralization, namely, the respiratory center, the kidneys, the suprarenals and the liver. *The increased respiratory rate in each of these conditions is accounted for by the specific stimulative effect of the increased H-ion concentration of the blood on the respiratory center.* The demand for neutralization of the increased acidity incident to emotion, work, infection or exophthalmic goiter is responded to by increased activity of the liver. If the acidity is increased so rapidly that neutralization cannot keep pace with it, then nephritis may develop as an effect of the acid by-products on the kidneys. Hence in intense emotion, exertion, infections and exophthalmic goiter, albumin and casts are frequently and sugar is sometimes found in the urine, and in extreme cases acute acidosis may develop. The acidosis of emotion, of infection and of exophthalmic goiter is expressed in each case by thirst. The cycles of vomiting in exophthalmic goiter are probably caused by acidosis, which is the most common cause of death in this disease. Thus, in the immediate symptoms and in the end-effects, even to the resulting acidosis and pathologic lesions, we find a close resemblance in the essential phenomena of exertion, emotion, infection and exophthalmic goiter — phenomena which are harmonized and interpreted by the kinetic theory.

CARDIOVASCULAR DISEASE

The analogy between diseases of the thyroid and diseases which among other organs involve the suprarenals is borne out by many clinical points. For example, exophthalmic goiter and cardiovascular disease have many characteristics in common. Each of these conditions bears an intimate relation to foreign protein activation and to "nervous strain." The etiology of exophthalmic goiter is much the same as that of cardiovascular disease. In each of these diseases a recall of the unhappy circumstances or conditions which led to or precipitated the acute stage is sufficient to cause an exacerbation of all the symptoms. The most efficient means by which each of these diseases may be modified are rest, diversion, and change of scene and occupation. In each the secretion of the gland most involved seems to bear a specific relation to the production of the disease. For instance, as has been stated, the cardinal symptoms of exophthalmic goiter may be produced in a normal person by the administration of thyroid extract, and in the patient with exophthalmic goiter the administration of thyroid extract, even in small quantities, causes an immediate exacerbation of the symptoms. In like manner, adrenin aggravates the symptoms of cardiovascular disease, and when given to a normal animal in excessive dosage is said to produce lesions similar to arteriosclerosis. Like results cannot be obtained by the administration of the secre-



A.—Section of normal suprarenal of dog.

B.—Section of suprarenal of dog after injection of diphtheria toxin.

C.—Section of suprarenal of a dog after injection of diphtheria toxin plus morphin.

D.—Section of suprarenal of a dog after injection of diphtheria toxin and the continuous administration of nitrous oxid for four hours.

Fig. 7.—Protective effect of morphin and of nitrous oxid on the suprarenals of dogs which had received injection of diphtheria toxin. Note the general disappearance of cytoplasm and nuclei in *B*, compared with the normal appearance of *C* and the conserved nuclei in *D*.

tion of any other gland in the body. In exophthalmic goiter the thyroid is always enlarged; in cardiovascular disease, the suprarenals are usually enlarged.

The literature of the etiology of arteriosclerosis is a long record of superlative stimulations and deep depressions; a story of great risks taken and great losses borne; of heavy burdens carried and long strains endured; of vast responsibilities assumed; of excessive dissipation; of chronic infection; of autointoxication; of overindulgence in food and intoxicants; of great joys and great griefs; of hopes, anxieties and despair. It is essentially a story of the modern world; of power and progress and success; of liberty and luxury and of their antitheses; of mental tolerance combined with bitter, crushing oppression. The contemplative scholar of the middle ages, the bucolic Swede, the wandering Scotch bard, the Italian peasant probably did not know arteriosclerosis, except as the logical accompaniment of a ripe old age. The director of vast financial enterprises, the man who holds the fates of thousands in his hand, he who carries tremendous physical burdens, the Chinese coolie, the Japanese rickashaw man, the athlete of the western world, such a rate of speed that the organism is unequal to the task of neutralizing the too rapidly formed acid by-products so that they can be eliminated without injury to the kidneys. In addition, we have shown that when the activity of the brain has been depressed by morphin, the rate of transformation of energy is decreased and the production of acid by-products correspondingly lessened. If, as seems probable, the suprarenals and the liver are the most important agents by which the reduction of the acid by-products is accomplished, then a habitual failure of these organs to perform this function might lead to an accumulation of harmful compounds which would directly facilitate tissue degeneration in the kidneys, thus causing nephritis. In Bright's disease, hyperplasia of the suprarenals is frequently seen.

DIABETES

The more powerful excitants of the kinetic system cause an increased output of adrenin, and adrenin causes the mobilization of the glycogen stored in the liver so that, among other results of kinetic activation, glucosuria is produced. While glucosuria is not diabetes, it represents a step toward this disease, and one

A.—Section of normal liver of a dog. B.—Section of liver of a dog after injections of diphtheria toxin. C.—Section of liver of a dog after injections of diphtheria toxin plus morphin. D.—Section of liver of a dog after injection of diphtheria toxin and the continuous administration of nitrous oxid for four days.

Fig. 8.—Protective effect of morphin and of nitrous oxid on the livers of dogs which had received injections of diphtheria toxin. Note the vacuolation of *B*, and compare with the conservation of nuclei and cytoplasm in *C* and *D*.

the emotional American, the excitable Jew, the bank president, the *bon vivant* — these are the men whose days are shortened by early hardening of the arteries; who preempt to themselves the cardiovascular, and likewise the cardiorenal diseases. The superlatively emotional Jew, besides being a frequent victim of cardiovascular disease, is likewise a frequent sufferer from the allied condition, endarteritis obliterans. Among animals, the high spirited wild animals in captivity, the mettled race horse and the dray horse, fretted and driven often beyond its capacity, are frequent sufferers from cardiovascular disease. The somnolent, unfettered cow is exempt.

BRIGHT'S DISEASE

In the great strain laid on the organs of reduction and elimination by the excessive acid by-products resulting from the kinetic drive of emotional activation, physical exertion and infection, we may find common causes of Bright's disease. We have shown by experiment that in frightened rabbits, enraged cats and traumatized dogs the kinetic system can be driven at

would expect, therefore, that the kinetic drive which in one individual causes the breakdown of the thyroid, in another of the brain, and in another of the suprarenals, in others might produce diabetes. That this is so is shown by the fact that diabetes is improved by the conditions which obviate psychic strain. The identification of the common causes of diabetes with the common causes of exophthalmic goiter, arteriosclerosis, neurasthenia and Bright's disease may explain why, in the words of a certain phrase maker, "when stocks go down in New York, diabetes goes up"; why diabetes is more commonly found in large cities, among individuals and races who are constantly under a strain of business perplexities, and are constantly within sight and hearing of thousands of irritating and harassing episodes, and why it is rare in localities where leisurely and quiet ways of life prevail. In the fact that here, again, the emotional trade-driven Jew is a frequent sufferer, we have important matters for consideration.

Diabetes not only numbers among its common causes the common causes of other kinetic diseases, but also

as in the case of exophthalmic goiter, arteriosclerosis, neurasthenia, etc., it is improved by rest, diversion and dietetic control.

SURGICAL METHODS OF CONTROLLING THE KINETIC DRIVE

It would seem to follow that a chronic disease which is made worse by increasing the kinetic drive would be improved by lessening the drive, and in like manner, would be improved temporarily by blocking the drive by means of morphin. Morphin is but a temporary expedient, however, and the results of its use may be worse than the disease caused by the drive. If the effects of morphin are produced by its control of the driving force of the brain, thus preventing the brain from driving the suprarenals and the thyroid, then a like result to that produced by morphin could be secured by breaking the connection between the brain and the thyroid and the suprarenals, by the excision of a portion of the thyroid and of the suprarenals, and, if still further blocking of brain impulses be required, by dividing the cervical sympathetics as well.

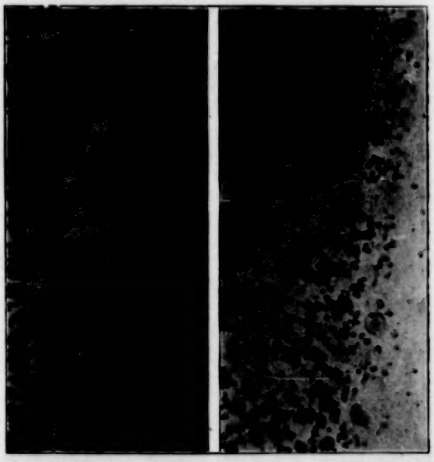
Fig. 9.—Soldier showing the characteristic facies common to both psychic and physical stress.

One would not expect these procedures to produce any subjective change in the patient. No function would be lost. He could work, be subject to emotion, and respond to infection as before, with the following exceptions: His power of physical exertion would be *diminished*, as would his response to emotional stimuli or to infection. His acid excretion would diminish, and his sugar tolerance would increase. In short, those diseases that are *temporarily* improved by morphin should be permanently improved by this process of *dekineticization*.

On this conception I have ventured on new surgical ground and have performed fifteen operations on patients with chronic diseases resulting from an excessive kinetic drive. I first operated on eleven hopeless epileptics, then on a patient with cardiovascular disease, on three patients with Raynaud's disease, and finally on an advanced diabetic. All made good operative recoveries. The operation, which was performed in different stages, comprised the excision of one suprarenal, the excision of approximately three fourths of the thyroid, and the division of the cervical sympathetics.

It is now two and a half years since the first of these operations was performed. It was not expected that epilepsy would be cured, but that the force of the attacks would be diminished, and perhaps the intervals lengthened, for since the epileptic attack represents a powerful temporary kinetic drive, it seemed possible that the severity of that drive might be modified. No patient has been cured, but all made good operative recoveries, and the severity of the attacks and the length of the intervals have been favorably influenced. The fact that some of these cases showed an increased sugar tolerance confirmed us in our belief that the same procedure might be of avail in cases of diabetes. The principal net result of these operations on epileptic patients was the assurance that in man as in animals these procedures do not interfere with normal functions. This fact being established, other fields are now being approached cautiously.

In Raynaud's disease there is a striking diversion of blood to the extremities, in ebbs and flows. These rhythms are in a measure determined by emotion, by cold, etc. Since it is known that Raynaud's disease is most common in that emotional race, the Hebrew, that the most significant effect of emotion is the increased mobilization of adrenin, and that one of the results of the increased fabrication of adrenin is the transference of blood from the inner organs to the surface of the body, it would seem that this otherwise hopeless disease might with propriety be attacked on a kinetic basis. Three patients thus treated by me, the first two and a half years ago, give fair promise



A B

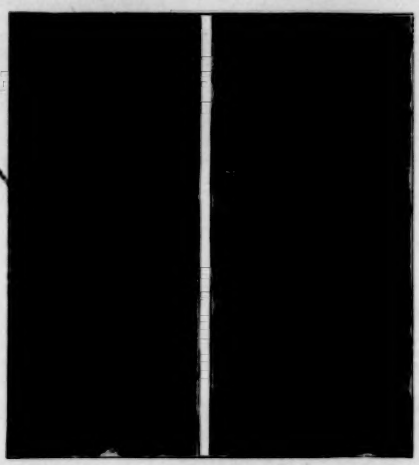
A.—Section of normal human cerebellum.

B.—Section of cerebellum of a soldier who had suffered from hunger, thirst and loss of sleep; had made the extraordinary forced march of 180 miles from Mons to the Marne; in the midst of the great battle was wounded by the explosion of a shell; lay for hours awaiting help and died from exhaustion soon after reaching the ambulance. Compare the faded out, exhausted Purkinje cells with the Purkinje cells in *A*.

Fig. 10—Effect of extreme activation on the brain cells of a soldier.

of recovery. But in a disease of such chronicity, the different phases of which are manifested in such long rhythms, judgment must be reserved until a long time has elapsed and until many cases have been observed.

Since the kinetic drive may be concerned in greater or less degree in the causation or continuance of Raynaud's disease, exophthalmic goiter, Bright's disease, cardiovascular disease and diabetes, on *a priori*



A B

A.—Section of normal suprarenal.

B.—Section of suprarenal of soldier described in Figure 10. The general disintegration of the cells, loss of cytoplasm, and misshapen and eccentric nuclei illustrate the effect of emotion, exhaustion, lack of sleep, pain, infection and trauma.

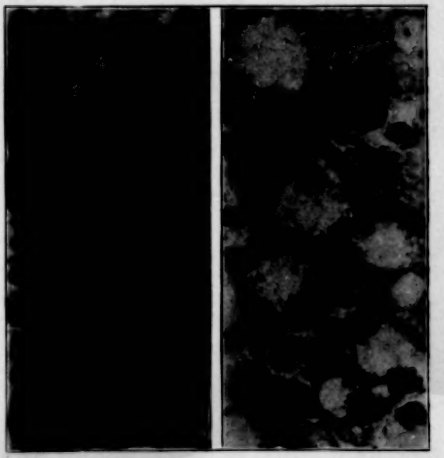
Fig. 11.—Effect of extreme activation on the suprarenals of a soldier.

grounds it is evident that either none or all of these will be benefited by a surgical reduction of the driving power of the kinetic system.

I have already compared the effects of the kinetic drive on the normal human mechanism to the normal action of the locomotive. In like manner the problem presented by these kinetic diseases may be compared to the effect on a damaged automobile of reckless driving by an irresponsible chauffeur. In such a case the machine may be prematurely wrecked, whereas with careful driving at a moderate speed even the damaged automobile may give long service. Vast numbers of men and women today possess such damaged mechanisms, which the stress of present-day life is driving to inevitable destruction. Included in this doomed throng are many of the most useful men and women — the very kinetic temperament to which they owe their achievements proving to be also their greatest menace. It is for such cases as these, in which medicine fails to provide the necessary kinetic control, that this surgical procedure is proposed. In considering this operation, it must be borne in mind that we are dealing with poor surgical risks, and as far as the suprarenalectomy is concerned, a technically difficult operation. Every possible protection, therefore, should be provided. It is most important that the operation be performed under nitrous oxid-oxygen, rather than under the lipoid solvent, ether. The principle of anociation should be applied throughout the operation, as the excessive acid-products resulting from cutting or handling sensitive tissues may diminish too much the narrow margin of safety and dispatch the patient. Especially is this true of diabetes.

The value of surgical modification of the kinetic system in that intense kinetic drive, exophthalmic goiter, is established. We know that by dividing the nerve supply of the thyroid, ligating the thyroid arteries, or excising a portion of the thyroid gland, this disease is modified or cured. In these cases the blood pressure falls, the myocarditis improves, albumin and casts disappear, the sugar tolerance is raised, the intense neurasthenia is improved. In other words, the renal, cardiovascular, glycogenetic and psychic phenomena simultaneously improve. I have no doubt that in exophthalmic goiter the excision of a suprarenal, or the division of the nerve supply to the suprarenals, would also facilitate the cure.

I have referred to the lessening of glucosuria by operation in certain cases of exophthalmic goiter. It is well known that in cases of either suprarenal or thyroid deficiency, sugar tolerance is raised, while, on the contrary, the injection of excessive amounts of adrenin or of excessive thyroid extract mobilizes sugar. Therefore, in intractable diabetes may it not be possible that the diminution of the total mass of the suprarenals and of the thyroid may sufficiently increase the sugar tolerance to mitigate or actually to cure the disease?



A B

A.—Section of normal liver.

B.—Section of liver of soldier described in Figure 10. The general disintegration of the cells, the loss of cytoplasm, and the vacuolated spaces within the cells illustrate the effect of emotion, exhaustion, lack of sleep, pain, infection and surgical trauma.

Fig. 12.—Effects of extreme activation on the liver of a soldier.

The patient with diabetes whom I have so treated through the courtesy of Dr. C. F. Hoover and Dr. C. D. Christie, Lakeside, is a man, aged 42, who was admitted to Lakeside Hospital in January, 1915. For a period of six months until June 25, when the first operation was performed,

the amount of sugar in the urine had ranged daily from 9.5 to 202.5 gm., with an average of 96.4 gm. At no time during these six months until the morning of the first operation was he known to be sugar free. In June at intervals of three and seventeen days, respectively, the following operations were performed: (1) section of the right cervical sympathetic; (2) left suprarenalectomy, and (3) excision of the left cervical sympathetic with partial thyroidectomy. The patient made a good operative recovery. On the day of the first operation the sugar content of the urine was 83.6 gm.; on the following day it was 8.4 gm., since which time, with the exception of a few instances between the last two operations, he has been continuously sugar free. This patient now —four months after his first operation—is taking approximately 250 gm. of carbohydrates daily, and since his operation he has gained 9 pounds. It should be stated that Dr. Christie has continued a careful medical supervision of the case, employing the Allen treatment. Therefore, to obtain the surgical net result, we must subtract from this striking improvement the undetermined factor of the Allen treatment.

SUMMARY

The kinetic theory harmonizes many facts in the great clinic of life as well as in the restricted clinic of medicine; it emphasizes the value of a mechanistic view of life in the study of both normal and pathologic processes, and it suggests a philosophy of life by means of which self-preservation may be secured through kinetic control.

According to the kinetic theory, the resemblance of many normal and pathologic processes — exertion, emotion, infection, autointoxication, etc. — suggests that the mechanism by which they are produced is identical with the mechanism by which the transformation of energy and the elimination of acid by-products are accomplished; that is, that these conditions are caused by variations in the kinetic drive.

Since an excessive kinetic drive may be the result of the simultaneous action of various factors in the external and the internal environment, then the control of one or more of these factors will lessen the drive and mitigate its effect. Thus the substitution of hope for fear may relieve the organism of one driving factor and by so much relieve the strain on the kinetic system. In other cases the depression of the activity of the brain by morphin or by nitrous oxid anesthesia controls an acute kinetic drive.

For still other cases in which disease has resulted from the physical injury wrought in certain organs by an excessive drive, *it is proposed as a problem, not as an accomplished fact*, that the activating organs of the kinetic system, the suprarenals and the thyroid, be reduced in size and that their communication with the driving organ — the brain — be in part severed. By an analogous method the result of an intense kinetic drive — exophthalmic goiter — is modified or cured; the accompanying cardiovascular, cardiorenal, myocardial and neurasthenic symptoms are coincidentally relieved, and sugar tolerance is raised.

If exophthalmic goiter which is due directly to the overspeeding of the kinetic system is thus relieved by partial excision of one of the driving organs, the thyroid, this mechanistic treatment effecting simultaneously the cure of the condition brought about by the driving power of exophthalmic goiter itself, then the logical conclusion is that these allied diseases, when brought into existence by other kinetic drives, may be mitigated or cured by a dekineticizing operation. *A large amount of experimental data not yet published suggests this problem.*

THE TREATMENT OF PAROTID TUMORS BY RADIUM *

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The second report of the Radium Institute of London describes a number of favorable results, characterized either as improvements or as cures, obtained in parotid tumors through the application of radium. The pathologic histology of these growths is not further specified in the text. The literature of the past few years contains occasional references to parotid tumors favorably influenced by means of radium; in no instance, however, so far as I am aware, had any of these tumors been submited to a careful microscopic study. It is, however, unquestionably a matter of importance to determine whether or not any particular type of parotid tumors is especially suitable for radium treatment. Not all of the cases which have been so treated have been cured, and it would make for greater precision in treatment, if it were possible to determine that certain types of parotid tumors respond to the treatment whereas others do not. In the case which is here reported a small portion of the tumor was removed for diagnosis, and it is on that account that the case is reported in detail.

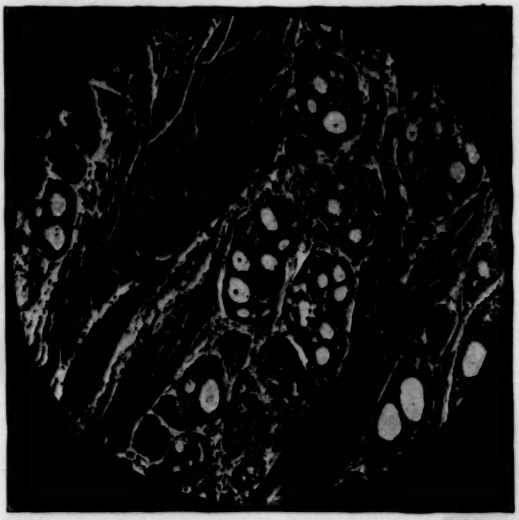

Fig. 1.—Photomicrograph of section of tumor.

* From the General Memorial Hospital.

The patient, an unmarried woman aged 38, was admitted to the General Memorial Hospital, Dec. 20, 1913. She gave the following history: Seven years previously she first became aware of pain located behind the right ear. Following this she observed an induration and swelling which first occupied the region in front of and below the ear. The swelling gradually increased in size, eventually involving the entire lower half of the ear and the upper part of the neck behind the ear. Difficulty in opening the mouth and pain during mastication induced her to have a number of teeth removed. In 1912 she developed the symptoms of facial paralysis on the right side. Toward the end of 1912 the right eyeball became somewhat more prominent.

Fig. 2.—Appearance of patient, January, 1913.

The condition on admission was described as follows: The right ear appears very much deformed, the lower half being involved in an indurated mass which extends forward on to the face, and back of the ear over the mastoid process and the upper part of the neck. This mass measures from side to side 3½ inches, and from above downward 2½ inches. It is extremely firm and resistant to pressure, the surface slightly irregular and nodular. The margins are fairly well defined from the neighboring healthy tissues. The growth is firmly fixed to the deeper structures. The skin is movable over it except behind the ear, where it is firmly adherent. In the area where it is adherent the skin presents a reddish discoloration and has dilated superficial vessels. The lower half of the ear, which forms part of the mass described above, is distorted and densely infiltrated, and is firmly fixed to the remaining tumor mass.

There is a complete right-sided facial paralysis with right lagophthalmus.

Both eyeballs are more prominent than normal, but the right eyeball more so than the left. The pupils are equal, regular, and react normally. The right abducent nerve is paralyzed.

December 29, a small specimen of tissue was removed from that part of the tumor lying behind the ear. The microscopic section presents strands of epithelial-like cells in the midst of which lie hyaline masses. The appearance corresponds to that frequently described as cylindroma. On these sections Dr. Ewing rendered the diagnosis of "adenoid cystic epithelioma." A neighboring lymph node, which was removed with the tissue, had not been invaded by the tumor process. On the other hand, the sections show that the muscle bundles had been extensively infiltrated and were in large part destroyed. None of the types of tissue which ordinarily characterize the mixed tumors of the parotid could be discovered in the sections.

Fig. 3.—Appearance of patient, January, 1913.

The classification of this tumor is of interest, inasmuch as it belongs to a type which has caused considerable discussion. Originally Billroth gave these tumors the name of cylindroma, for the reason that hyaline bodies of various shapes, but predominantly cylindric, could be expressed from them when fresh. As regards the histogenesis of cylindroma, there was considerable difference of opinion, some holding them to be sarcoma, some endothelioma, and still others carcinoma. It is now known that the hyaline character is one which may be shared by various types of tumor, and the name is therefore merely of descriptive, not of generic value. Discussion of this type of salivary gland tumor has in recent years centered chiefly around the question as to whether they are endothelial or epithelial in origin. Owing to the work of Hinsberg and many others, including latterly Marchand, the epithelial origin has now become well established. Krompecher accepted this view, but attempted to go a step further, and ranged these tumors with the basal-celled carcinomas, which have so charateristic a structure among skin tumors. It is true that in many respects they present a striking analogy with the basal-celled cancers. They are usually well encapsulated, nodular, slowly growing tumors, which may be surgically removed without likelihood of recurrence. Exceptionally, however, the epitheliu.n shows an infiltrative tendency, and breaks through the capsule. Microscopically, also, the structure is similar in many respects to the basal-celled tumors. For these reasons it seems proper to consider these tumors as a separate group, differing in certain important features from adenocarcinoma as commonly understood. Although they resemble the basal-celled group in certain respects, it is not likely that they have the same cellular ancestry, for the reason that they have no connection with the epidermis. It seems correct to trace their origin to the salivary gland itself. Not improbably they arise, as Ribbert and others have held, from congenitally ectopic masses of glandular tissue, which assume an excessive, but not a malignant growth in later life. Thus it will be evident that the independent position of these tumors among the adenocarcinomas gives a rational ground to the expectation that they might react to therapeutic measures in a somewhat exceptional manner.

In January, 1914, a small incision was made into the tumor below and behind the ear in the most prominent part of the

swelling. Into this incision a trocar was driven to the depth of about 1 inch. Into this cavity a tube containing radium was introduced. In all, the patient received eighteen such applications. The tube consisted of 10 mg. of radium bromid shielded by 1 mm. of lead. It was left in position at each application for four hours. The applications were made at first at intervals of three or four days, and subsequently at intervals of a week or more. The applications caused no pain and very little local reaction. Within two weeks after the beginning of the treatment the tumor began to undergo a marked change characterized by a diminution throughout its entire extent. At the same time the induration gradually disappeared. February 10, the patient was discharged. At this time the tumor had almost entirely disappeared, and the parts had been restored to a condition approximately normal. The lobe of the ear, however, still remained slightly swollen and indurated, a condition which has now completely disappeared. The cheek, the neck and the mastoid region present no trace of their previous condition. After her discharge from the hospital, the patient returned at intervals of about two to four weeks to receive Roentgen-ray or radium treatment. At the present time there is no indication of any recurrence, although treatment has been suspended for many months. The permanency of this recovery is, of course, not yet established.

The facial palsy, which was unquestionably due to destruction of the facial nerve either by infiltration or by pressure, has not receded.

A puzzling feature of this case is presented by the condition of the right eye. Ophthalmologists to whom the patient has been referred have attributed the ocular condition to the presence of a retrobulbar mass pushing the eye forward and involving the sixth nerve. Whether or not this mass can be brought into relation to the parotid tumor is a matter of speculation. The ocular condition has not been affected by the treatment.

Fig. 4.—Appearance of patient, July, 1915.

Fig. 5.—Appearance of patient, July, 1915.

SUMMARY

A parotid tumor of seven years' duration, presenting certain characteristic pathologic features, was treated for a period of six weeks by the insertion of radium into the tumor. The tumor disappeared, and after an interval of almost two years presents no recurrence.

Medical School Inspection.—The North Carolina State Board of Health is actively advocating the medical inspection of schoolchildren in counties which do not have a whole-time county health officer, that a system in inspection arrangements may be perfected whereby the local county board of health and school officials may arrange with the state board for an inspection. The board furnishes competent experienced physicians for this work, which is to be made a part of the unit system of the work to be performed by the state board in counties whose incomes do not, in the opinion of local public sentiment, justify the installation of a whole-time health officer.

TRICHINOSIS

REPORT OF A CASE WITH THE TRICHINA LARVAE IN THE SPINAL FLUID

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CHICAGO

Early in 1914, Van Cott and Lintz[1] reported the finding of actively motile larvae in the spinal fluid of a patient with trichinosis. Since that time their findings have not been confirmed until the finding of the larvae in the case herewith submitted.

History.—A. K., man, aged 19, a laborer, entered my service in the medical ward of the Cook County Hospital, Oct. 29, 1915, stating that he had had pains in the muscles of the arms and legs for four weeks, and that he was unable to straighten them out. At the time of the onset of his sickness he noticed a slight edema of the eyelids which lasted three days. Severe drenching sweats and periods of chilliness and fever had been present for one week. On the night before entrance to the hospital he had a slight nosebleed. He did not complain of any gastrointestinal distress of any kind, nor had he had any headache. Before entering the County Hospital he had been for three weeks in another institution where the diagnosis of trichinosis had been made from the history and muscular pain, but a piece of muscle tissue had not been excised for examination.

The patient had eaten half a pound of raw hamburger steak every Saturday night for three weeks. He did not smoke, was a moderate drinker and denied venereal disease.

Examination.—The patient appeared to be severely prostrated and was unable to move around in bed without considerable pain. There was marked rigidity of the neck and tenderness of the intercostal muscles; the abdomen was diffusely tender to touch, both on superficial and deep pressure; the spleen was not enlarged. There was marked tenderness of the biceps of the arms and of the calf muscles, while the other muscles appeared to be less tender; he was unable to extend the arm on account of the severe pain in the biceps. The Kernig sign was present; there were no Babinski and no exaggeration of the patellar reflexes. October 30, an excised piece of muscle from the biceps showed as many as ten unencapsulated trichinae in a low power field, many of which were also seen in the expressed muscle juice. A blood examination at this time revealed 8 per cent. eosinophils, 77 per cent. polymorphonuclears and 15 per cent. small and large mononuclears. 13,000 leukocytes, 4,200,000 reds and 83 per cent. hemoglobin. Two subse-

1. Van Cott, J. M., and Lintz, William: Trichinosis, THE JOURNAL A. M. A., Feb. 28, 1914, p. 680.

quent examinations, November 23 and 24, showed 37 and 38 per cent. eosinophils, respectively.

The patient's temperature on admittance was 101.2 F., and ranged from 99.6 to 101.4 during practically the whole time he was under observation, becoming normal about November 21. At that time he developed an acute tonsillitis with a temperature of 102 which lasted for three days and from which he recovered completely. A blood culture at that time was negative.

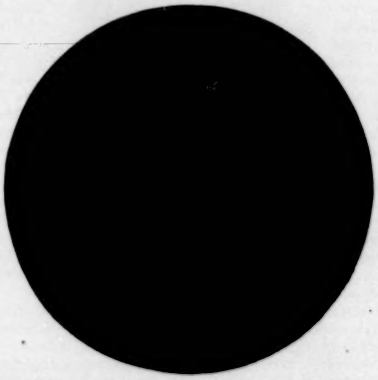
November 1, 20 c.c. of clear, serous spinal fluid under high pressure were removed, positive to Nonne and Noguchi tests, and showing about a dozen actively motile trichina larvae in the centrifuged specimen. A puncture, November 8, yielded negative results, aside from still positive Nonne and Noguchi tests; a cell count was not made at the time.

Treatment and Results.—Following the administration of calomel, November 6, an enormous number of trichinae were found in the stool; these were found in small masses of mucus. The embryos were also found in the blood with the use of the Herrick and Janeway technic.

The patient now seems to have recovered completely, and is able to be up and about in the ward, performing the duties of a ward man. There is practically no muscular tenderness.

The points of special interest in this case are the presence of the trichinae in the spinal fluid without symptoms referable to the brain or cord, the absence of gastro-intestinal symptoms, the small percentage of eosinophils at the height of the disease and their increase as the patient's condition improved.

Kafka[2] states that the cysticercus and trypanosomes have been found in the spinal fluid. On account of the absence of cerebrospinal symptoms in the majority of patients with trichinosis, the spinal fluid has not been examined for the parasite. The positive Nonne and Noguchi tests would indicate a meningeal irritation; this might be a clue as to the manner in which the parasites enter the spinal fluid.



Trichina larva, from spinal fluid, mounted on phenol gelatin.

In the consideration of the manner in which the parasites may enter the spinal fluid there are three possible sources of entrance: 1. Directly through the central capillaries of the choroidal villi. 2. Cushing[3] states that the perivascular lymphatics contribute to the cerebrospinal fluid, and it is possible that the organisms may gain entrance to the cerebrospinal fluid through this route. 3. Directly through the cerebral cortex into the subarachnoid space.

Sicard[4] cites a case of trichinosis which came to necropsy in the Boston City Hospital in which the trichinae were found in the cerebrum. It would seem probable, however, that the easiest mode of entrance would be through the choroid plexus.

The absence of gastro-intestinal symptoms has been noted on several occasions. McClure[5] in thirty cases reports diarrhea in nineteen, constipation in three, anorexia in fourteen. As the latter two symptoms have not provoked the distress that the diarrhea does, it can be seen that these symptoms may be easily overlooked. It has also been noted[6] that when rats are fed large quantities of trichina-infected meat, they die within one or two days without intestinal lesions.

The low eosinophil count during the height of the disease is not remarkable if we parallel this finding with the low leukocyte count in severe pneumonias, or the low resistance to infection when the body is overwhelmed by toxins. Gruber[7] found that very severe and unfavorable cases of trichinosis show a low eosinophil count. Van Cott and Lintz[1] cite an instance of 5 per cent. eosinophils in a fatal case just before death. Herrick,[8] quoting Opie, makes a statement to the same effect. Only after the acute symptoms had subsided and recovery seemed certain did this patient's eosinophil count rise from 8 to 38 per cent. I have repeatedly seen patients with mild trichina infections at the Cook County Hospital with from 50 to 60 per cent. eosinophils.

While several examinations of the stool failed to show the parasite, the administration of large doses of calomel caused them to appear in large, tangled masses; coincident with the appearance of the parasites in the stools the patient's condition began to improve.

CONCLUSIONS

1. Trichina larvae can be found in the cerebrospinal fluid.

2. Meningeal irritation undoubtedly exists, as is shown by the positive Nonne and Noguchi tests.

3. Severe infections show low eosinophil count during the acute stage, which increases with convalescence.

4. Vigorous catharsis with a view of clearing the intestinal tract from all parasites which have not yet penetrated into the mucosa appears to have limited the infection.

25 East Washington Street.

2. Kafka, V.: Ztschr. f. d. ges. Neurol. u. Psychol., 1912, vi, Nos. 4 and 5.
3. Cushing: Studies in Cerebrospinal Fluid, Jour. Med. Research, September, 1914.
4. Sicard: Med. Rec., New York, Aug. 15, 1914.
5. McClure, C. W.: Jour. Iowa State Med. Assn., March, 1915.
6. Staubli: Trichinosis, 1909.
7. Gruber: Neue Studien über die Pathologie der Trichinose, München. med. Wchnschr., 1914, p. 645.
8. Herrick: Jour. Med. Research, February, 1913.

Comparative Vivisection.—The castration of an animal as performed on the farm by far exceeds in cruelty and callousness of performance anything which I have ever witnessed in a laboratory. A few hundred animals are used in all our laboratories for all purposes. The census report shows that in California, in 1909, there were born 163,728 bull calves. It is fair to assume that 150,000 were castrated. There were born 41,927 colts. Of these approximately one half were probably males, and making deductions for those kept as stallions, there were here at the lowest estimate 19,000 geldings. There were 283,741 pigs born, which means probably 135,000 males to have their testes ripped out. A total each year in California of 304,000 operations. Comparing these in number and violence with the work in biological laboratories and medical schools, the latter becomes wholly insignificant. But the gelding of the boar does not have emotional appeal, and we hear little about it. Dehorning of cattle is painful, but saves vastly more pain than they would inflict on one another.—S. S. Maxwell, *Science*.

SUMMARY OF CHEMOTHERAPEUTIC STUDIES IN EXPERIMENTAL TRYPANOSOMIASIS *

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AND

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METHOD OF STUDY

1. *Therapeutic Experiments.*—In our investigations, the following four parasites were employed: the *Spirochaeta recurrentis* (the parasite of relapsing fever), the *Trypanosoma brucei* (the parasite of Nagana disease of horses), the *Trypanosoma lewisi* (a saphrophytic parasite in rats), and *Trypanosoma equiperdum* (the parasite of la dourine or horse syphilis).

Inasmuch as the influence of the drug administered on the duration of life of the infected animals was one of the important criteria of its efficiency, we found the *Trypanosoma lewisi* unsatisfactory because it does not as a rule kill the animal. The spirochete of relapsing fever led to confusing results because of the frequent remissions and the disappearance of the parasite from the peripheral blood. The *Trypanosoma brucei* killed rats within a few days, a period too short to study the effects of the weaker agents. The *Trypanosoma equiperdum* was found admirably adapted to the purposes of our studies, and was the parasite generally employed by us. It kills the rats in from five to seven days after injection.

Fig. 1.—Patient with hereditary syphilis.

The series of rats were infected by intraperitoneal injection with *Trypanosoma equiperdum* according to the methods of Kolmer.[1] By these methods, contamination is avoided and approximately known numbers of trypanosomes injected. We have found this a matter of considerable importance, inasmuch as irregular methods of infecting the test animals, as by injecting enormous numbers of trypanosomes in one series and only a few in another, may readily influence the results, whereas with a uniform method, succeeding series of rats may be infected with approximately the same and known numbers of trypanosomes with uniform results capable of comparison.

Rats were infected intraperitoneally twenty-four hours before the intravenous injection of the solution of the chemical under study. With the numbers of trypanosomes injected by us (generally from 100,000 to 150,000 per rat) the parasites were practically never found in the peripheral blood until after the first twenty-four hours. We have experimented with other methods consisting of the infection of the test animal followed immediately by the injection of the drug, and also by allowing forty-eight hours or more to elapse between infection and the administration of the drug, when the parasites had multiplied sufficiently to be found in the peripheral blood; but the foregoing method has yielded us the best results.

Each animal was carefully weighed, and the quantity of the chemical injected was proportioned to the body weight. It would be a serious error to inject a series of rats with increasing doses of the drug regardless of the weights of the animals; in all of our work, the chemicals were administered according to each hundred grams of body weight, and each dose was prepared separately in a sterile vial for each individual animal.

The chemicals under study were administered dissolved in sterile distilled water so diluted that the dose was contained in exactly 1 cubic centimeter. Intravenous injections were made into the jugular vein or in some instances into the caudal vein, the former method being preferred because it permits of absolute accuracy under conditions in which the loss of even a drop or two of the solution might seriously influence the results.

Chemicals which were not soluble in water were employed in oil or incorporated in a fatty menstruum

* An extended publication of the results abstracted here will be published later.

1. Kolmer, J. A.: A Method of Transmitting Blood Parasites; Jour. Infect. Dis., 1915, xvi, 311; A Method of Transmitting Known Numbers of Trypanosomes, with a Note on the Numeric Relationship of Trypanosomes to Infection, ibid., 1915, xvii, 79.

TABLE 1.—INFLUENCE OF INTRAVENOUS INJECTIONS OF MERCURIC CHLORID AND EXESOL ON EXPERIMENTAL TRYPANOSOMIASIS; RATS INFECTED WITH INTRAPERITONEAL INJECTIONS OF 150,000 TRYPANOSOMA EQUIPERDUM †

Substance	Rat No.	Weight, Gm.	Dose per 100 Gm.	Daily Examination of Blood						
				1	2	3	4	5	6	7
Mercuric chlorid	1	70	.0 07	∓	+	+++	++++	death		
Mercuric chlorid	2	63	.0063	—	—	++	++	++++	death	
Mercuric chlorid	3	48	.0062	—	few	few	++	++++	death	
Mercuric chlorid	4	74	.0062	—	few	+	++++	++++	++++	death
Mercuric chlorid	5	70	.0061	—	few	+	++++	++++	death	
Exesol	6	51	.001	—	+	++++	++++	++++	death	
Exesol	7	51	.0008	—	+	++	++++	++++	++++	death
Exesol	8	69	.0006	—	+	++++	++++	death		
Exesol	9	61	.0004	—	+	++++	++++	death		
Control	10	45	0	—	+	++++	++++	death		
Control	11	97	0	—	+	++++	++++	death		
Control	12	77	0	—	+	+++	++++	death		
Control	13	62	0	—	+	++++	++++	++++	death	

† In the tables, — equals number of trypanosomes in the peripheral blood; few equals 1 to 2 in a field, or in every other field; + equals about 5 to 10 in a field; ++ equals about 10 to 20 in a field; +++ equals large numbers that may be roughly counted (not accurately); ++++ equals very large numbers; cannot be counted.

and injected intramuscularly into the thighs. Soluble drugs were also administered by mouth to rabbits and rats by means of a proper sized catheter used as a stomach tube.

In every experiment at least four controls were included. All animals were examined daily by securing a drop of blood from the tail on a microscopic slide, spreading with a glass cover and examining at once with 1/6 objective and a No. 4 eyepiece (Leitz). The results were recorded according to the number of trypanosomes observed in a large number of fields, according to the scheme given under Table 1.

There were necropsies after the deaths of the majority of the animals, and histologic examinations were made of the organs. As pointed out in a former paper, even with the most careful attention to the weight of the animal, the dosage and the technic of infection and of administration of the drug, animals would not infrequently succumb for inexplicable reasons; likewise quantitative relations with minute and closely graduated doses of a chemical do not always yield uniform and graduated results. It appears to be impossible to conduct biologic experiments of this character with justified expectation of precise mathematical results.

2. *Toxicity Experiments.*—The detailed results of an extensive series of experiments on the toxicity of the water soluble and insoluble salts of mercury will shortly appear in another communication.[2]

In testing the toxicity of mercurial and arsenic salts, white rats and rabbits were employed. Two methods of determining toxicity were employed by us, namely, the determination of (1) the immediate lethal dose (dosis lethalis) and (2) the largest dose that is tolerated over a prolonged but arbitrarily fixed period of time (dosis tolerata).

As in the therapeutic experiments, each drug was administered according to the weight of the animal, the dose for each animal being separately prepared in sterile vials with sterile solvents and diluents.

In determining the immediate lethal dose of a chemical, rats and rabbits were injected intravenously and the immediate effects noted and recorded; for the tolerated dose, rats and rabbits were injected intravenously with water-soluble chemicals and intramuscularly with water soluble and insoluble substances.

Rats were largely employed in the study of the toxicity of the mercurials, and both rats and rabbits for salvarsan and allied products.

In determining the lethal dose of salvarsan and allied compounds in rabbits, the substances were prepared with sterile water as the solvent and diluent, and in such manner that 15 c.c. contained the entire dose per kilogram of body weight determined on. The animal was then injected intravenously with 10 c.c. of the solution followed in a few minutes by the remaining 5 c.c. if no untoward effects were noted. Each animal was then kept under close observation until death occurred, or for at least a month if it survived. After necropsy, the internal organs were submitted to gross and histologic examinations. In this manner we have made a great number of necropsies after the administration of various doses of salvarsan and allied products and at varying intervals after administration. This material is being studied at present, and a full report will be made at a future time.

Fig. 2.—Patient in Figure 1 about two weeks later. Patient received one dose of 0.2 gm. of the salvarsan prepared in our laboratories; no other treatment.

The intravenous injection of a lethal dose of salvarsan into a rabbit is followed almost immediately by violent convulsions followed by a period of general paralysis. Smaller doses may produce a brief convulsion followed by paralysis especially involving the hind legs, the animal recovering in from a few minutes to an hour.

The injection of 15 c.c. of the fluid rapidly and without interruption is more likely to produce immediate effects than the injection of 10 c.c. followed in a few minutes by the balance of 5 c.c. The injection of 10 c.c. of sterile water or normal salt solution alone is without effect on a rabbit of average weight.

INTERPRETATION OF FINDINGS, AND THEIR BEARING ON THE TREATMENT OF SYPHILIS

Of the various drugs employed by us, the only ones that were found capable of destroying the *Trypanosoma equiperdum* (and indeed, trypanosomes generally) in the blood of infected animals were those

2. Schamberg, Jay F.; Kolmer, J. A., and Raiziss, G. W.: Jour. Cutan. Dis., to be published.

TABLE 2.—INFLUENCE OF INTRAVENOUS INJECTIONS OF COPPER SULPHATE AND SODIUM CACODYLATE ON EXPERIMENTAL TRYPANOSOMIASIS; RATS INFECTED WITH INTRAPERITONEAL INJECTIONS OF 108,000 TRYPANOSOMA EQUIPERDUM

Substance	Rat No.	Weight, Gm.	Dose per 100 Gm.	Daily Examination of Blood							
				1	2	3	4	5	6	7	8
Copper sulphate	1	61	.0008	—	few	+	+++	+++	++++	death	
Copper sulphate	2	57	.0006	—	+	+	++++	++++	death		
Copper sulphate	3	58	.0004	—	+	+	++++	++++	death		
Copper sulphate	4	57	.0002	—	few	few	few	++	++++	death	
Copper sulphate	5	54	.0001	—	few	+	++++	++++	death		
Sodium cacodylate	6	72	.01	—	few	++	++++	++++	death		
Sodium cacodylate	7	75	.008	—	few	++	++++	death			
Sodium cacodylate	8	102	.006	—	few	++	++++	++++	++++	++++	death
Sodium cacodylate	9	82	.005	—	few	++	++++	death			
Sodium cacodylate	10	120	.004	—	few	++	++++	death			
Sodium cacodylate	11	71	.003	—	few	++	++++	death			
Sodium cacodylate	12	106	.002	—	few	++	++++	death			
Sodium cacodylate	13	92	.001	—	few	++	++++	death			
Control	14	90	0	—	few	++	++++	death			
Control	15	101	0	—	few	++	++++	death			
Control	16	75	0	—	few	++	++++	death			
Control	17	83	0	—	few	++	++++	++++	death		

belonging to the arsenobenzol group, namely, salvarsan and neosalvarsan.

FAILURE OF MERCURY, COPPER, ENESOL, SODIUM CACODYLATE AND IODIN

Mercury, copper, enesol[3] and sodium cacodylate in the maximum nonlethal dosage exerted no appreciable effect on the number of trypanosomes in the blood, or on the duration of life of the experimental animal. Scores of experiments were carried out with all of the well-known mercurial salts and with a number of new organic mercurial compounds made in our laboratory, but with the same results as were obtained with mercuric chlorid. Iodin was likewise employed intravenously, but failed to exert any trypanocidal influence. We recognize that the failure of these substances to influence trypanosomiasis does not indicate that they are equally inefficacious in syphilis. Experimental trypanosomiasis is an overpowering infection in which the blood soon swarms with parasites which rapidly destroy life, unless a powerful trypanocidal drug is employed. The trypanosomes react in large measure to the influence of drugs, as do the spirochetes; the spirochete of relapsing fever, which is resistant to the drugs mentioned above, is readily destroyed by salvarsan.

Fig. 3.—Patient with chancre of the chin with accompanying adenopathy.

We know, however, from clinical experience that mercury and the iodids exert a curative influence on the lesions of syphilis. Whether they do so by the formation of some intermediate product which exerts a noxious influence on the spirochetes, or whether they stimulate the formation of antibodies, or whether they act in some other manner, is yet unknown.

Fig. 4.—Patient in Figure 3 two weeks later. Patient received two injections of 0.3 and 0.6 gm., respectively, of the salvarsan prepared in our own laboratories.

We are publishing elsewhere our studies of the toxicity of mercury; the effective dose of salvarsan is distinctly less poisonous than the effective dose of mercury. This is due to the relatively low organotropism of salvarsan as compared with mercury. By reason of this fact, salvarsan can be given in massive doses. Experimental animals will stand 60 milligrams or more of salvarsan intravenously, per kilogram of body weight, whereas 3 mg. per kilogram of mercury intravenously proves fatal.

Our findings in animals convince us that weekly intramuscular injections of insoluble mercurials must of necessity lead to cumulative effect, with frequently severe damage to the kidneys. We believe the safest effective way to employ mercury is by inunction.

3. Enesol: An Arsenic and Mercury Preparation of Uncertain Composition, Propaganda, THE JOURNAL A. M. A., July 26, 1913, p. 293. Enesol has recently been shown to be a mixture of basic mercuric salicylate and methylarsenic acid.

TABLE 3.—INFLUENCE OF INTRAVENOUS INJECTIONS OF SALVARSAN (GERMAN AND DERMATOLOGICAL RESEARCH LABORATORY PRODUCTS) AND NEOSALVARSAN (GERMAN) ON EXPERIMENTAL TRYPANOSOMIASIS; RATS INFECTED WITH INTRAPERITONEAL INJECTIONS OF 125,000 TRYPANOSOMA EQUIPERDUM

Substance	Rat No.	Wt. Gm.	Dose per 100 Gm.	Daily Examination of Blood 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Salvarsan (German)	1	80	.0057																								
Salvarsan (German)	2	80	.0062																								
Salvarsan (German)	3	75	.0053																								
Salvarsan (German)	4	75	.0053																								
Salvarsan (German)	5	80	.0057																								
Salvarsan (German)	6	80	.0062														death										
Salvarsan (Dermatological Research Lab.)	7	80	.0056																								
Salvarsan (Dermatological Research Lab.)	8	80	.0055																								
Salvarsan (Dermatological Research Lab.)	9	80	.0055																								
Salvarsan (Dermatological Research Lab.)	10	80	.0057																								
Salvarsan (Dermatological Research Lab.)	11	80	.0062																								
Salvarsan (Dermatological Research Lab.)	12	80	.0058																								
Neosalvarsan (German)	13	75	.01					death																			
Neosalvarsan (German)	14	80	.0125		death																						
Neosalvarsan (German)	15	80	.0077																								
Neosalvarsan (German)	16	80	.0046																								
Neosalvarsan (German)	17	80	.0062						few																		
Neosalvarsan (German)	18	80	.0077					few	few			few															
Neosalvarsan (German)	19	80	.0062						few			few															
Neosalvarsan (German)	20	80	.0062						few			few															
Control	21	80	0																								
Control	22	80	0																								
Control	23	80	0																								
Control	24	80	0																								

EXPERIMENTAL STUDY OF THE SALVARSAN PREPARED BY THE DERMATOLOGICAL RESEARCH LABORATORIES

The German product and the arsenobenzol prepared by us have been tested out on animals on a number of occasions. The accompanying tables represent the average result. It will be seen that the two preparations do not vary materially in their trypanocidal influence. Both products, in adequate dosage, are capable of producing a permanent sterilizing effect. When the dose is insufficient, trypanosomes may appear in the blood at the end of two or three weeks. After they appear they invariably lead to the death of the animal. We have found the sterilizing dose with the *Trypanosoma equiperdum* to be about 15 mg. per kilogram of body weight. Neosalvarsan has proved to be inferior in its effect to salvarsan. This experimental finding harmonizes with the preponderance of clinical experience.

Toxicity Tests.—Our product has given most gratifying results as far as the immediate lethal intravenous dose is concerned.[4] In the table setting forth these experiments it will be seen that 60 mg. per kilogram of body weight is almost uniformly tolerated by rabbits, and at times they will stand considerably larger doses. Unless this amount is well borne, we do not regard the drug as a proper one to employ; not that its use would jeopardize the life of a patient, but rather that it would be prone to produce more severe reactive symptoms. The tolerated dose in rabbits is about seven to eight times greater per kilogram than the maximum dose that is given to man.

TABLE 4.—TOXICITY OF SALVARSAN (GERMAN AND DERMATOLOGICAL RESEARCH LABORATORY PRODUCTS) FOR RABBITS BY THE INTRAVENOUS INJECTION OF SINGLE LARGE DOSES

Date	Product	Weight of Rabbit, Gm.	Dose per Kilo of Body Weight, Mg.	Immediate Results	Duration of Life
4/ 6/15	German	1,676	70	Convulsions and paralysis	Few minutes
6/ 9/15	German	1,660	60	No effects	21 days
11/16/15	German	2,113	30*	Convulsions and paralysis	Few minutes
11/16/15	German	1,681	55.2	Convulsions and paralysis	Few minutes
4/ 6/15	Dermatological Research Laboratory (P_1)	1,425	70	Paralysis; recovery	24 days
4/15/15	Dermatological Research Laboratory (P_2)	1,898	70	No effects	35 days
5/ 8/15	Dermatological Research Laboratory (P_{10})	1,130	70	Convulsions and paralysis	Few minutes
6/ 9/15	Dermatological Research Laboratory (P_{13})	1,320	60	No effects	Over 6 months
10/22/15	Dermatological Research Laboratory (P_{17})	1,235	60	No effects	Over 1 month
10/23/15	Dermatological Research Laboratory (P_{18})	1,625	60	No effects	Over 1 month
10/29/15	Dermatological Research Laboratory (P_{19})	1,630	60	No effects	Over 1 month
11/29/15	Dermatological Research Laboratory (P_{20})	1,837	60	No effects	Over 1 month

* This tube of salvarsan, No. A 2566, was purchased in the open market.

CLINICAL RESULTS

We have administered our arsenobenzol intravenously over 175 times without any accidents whatsoever. In a proportion of cases such reactive symptoms of chilliness, headache, slight fever, nausea and occasionally vomiting may occur, but these pass away in the course of a few hours. The therapeutic results we believe to be indistinguishable from those obtained with the German product. A healing influence on lesions is often evident in from twenty-four to forty-eight hours. In the accompanying photographs are seen the effects of one and two doses of the drug, respectively.

Several hundred doses have been administered by others than ourselves, and the reports we have received correspond with our own observations.

4. Rabbits that survive this dosage will as a rule live in apparent good health for a month, at which time necropsies are made for histologic study.

BERIBERI IN THE AMAZON BASIN

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Beriberi is, as yet, a very common disease in the Brazilian portion of the Amazon Basin, and that means nearly the whole of the greatest river basin in the world. The view of some foreign physicians in regard to this disease in Brazil is that perhaps beriberi here may be different from that met in other portions of the globe. After having seen beriberi in San Francisco in 1906, however, and later treating and observing it in the hospitals on the Isthmus of Panama from 1907 to 1909, with a more recent experience in the employ of the Madeira-Mamore Railway Company during six years, from 1909 to the present time, in preliminary and location engineering parties, construction camps, operation camps and in the Candelaria Hospital, I am convinced that the beriberi of all these places is the same disease.

The Madeira-Mamore Railway lies 1,500 miles from the mouth of the Amazon River, on the east bank of the Madeira River, in a dense tropical forest. Malaria of a pernicious type, with its other form, blackwater fever, dysentery, pneumonia, ankylostomiasis, beriberi and leg ulcers are the commonest cause of patients entering the Madeira-Mamore Hospital at Candelaria, the only hospital for many hundred miles in any direction. This institution is well screened and well equipped.

An excellent article on beriberi conditions as seen here, by Dr. Carl Lovelace,[1] former chief surgeon of the Madeira-Mamore Railway Company, is intended to show that beriberi in the Amazon Basin cannot have a food basis. Under the prophylaxis and treatment as there laid down, seven doctors (one Scotchman and six Americans), some nurses and many laborers developed beriberi and were consequently either deported or buried. Today, with few exceptions, the medical men of Brazil follow the same idea and have no faith in the teaching that beriberi is caused by a food deficiency.

On coming to this country on vacation this September, I was much surprised to learn that many American physicians who have seen and treated beriberi in various parts of the world as well as in the Southern States still believe that this malady is propagated either by a micro-organism or is a place disease. In recent conversations on this subject with some of these medi-

1. Lovelace, Carl: The Etiology of Beriberi, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2134.

cal men, it appeared that there is much diversity of opinion and much faulty treatment.

The object of the present paper is to demonstrate how readily beriberi may be cured as well as caused to disappear from any locality by the application of well-known dietary principles.

At Candelaria, the Madeira-Mamore Railway Hospital had 30,430 admissions during the four years ending Jan. 1, 1912, and in that number there were 963 cases diagnosed as beriberi. Since then construction work has been superseded by operation, with a consequent decided lessening of the number of employees and a corresponding decrease in the number of hospital admissions; but cases of beriberi are always present in the wards.

As I had long been a believer that a lack in the food was the causation of this disease, a decided change was immediately instituted in the food supplied at Candelaria Hospital when I became head of the medical department of the railroad, in November, 1912. It was impossible to enforce my views beyond the limit of the medical department. Previous to November, 1912, the diet had been, for the first-class employees, on the line and in the hospital: tinned vegetables in considerable variety, tinned baked beans (mentioned separately particularly), tinned soups, tinned meats, tinned fish, farina de agua, fresh Irish potatoes, dried Spanish onions, a few other fresh vegetables, some fresh fruit but more often the tinned variety, ices from tinned milk and cream, fresh milk (for patients only) and eggs daily, polished rice, and the following from white wheat flour: macaroni, hot cakes, bread and pastries. The food, especially at the hospital, was always abundant, of much variety and very tastily prepared.

The laborers and second-class patients ate polished rice daily (when not replaced by macaroni made of white wheat flour), farina de agua, one and one-half medium sized loaves of white wheat flour bread (13 ounces actual weight), tinned codfish, tinned meats, fresh Irish potatoes almost always one time daily, and fresh meat or fresh fish once daily, while sacked dried beans were frequently prepared.

When I took charge the following changes were made: Polished rice, macaroni, tinned vegetables, tinned fruits, tinned soups, tinned fish and tinned meats were practically eliminated. It was not possible to omit the white wheat flour, as the management would not consent to buy whole meal wheat flour or rye flour. First-class patients and employees received at breakfast: fresh fruit, cereal porridge, fresh eggs with ham or bacon, coffee or cocoa and toast, and at lunch and dinner: two or three different fresh vegetables consisting of Irish potatoes, sweet potatoes, yams, pumpkins, squashes, string beans of many varieties, tomatoes, cabbages, kale, okra, yucca (or cassava or macaxeira), baked plantains, eggplant, corn, cucumbers, radishes and lettuce. From dried peas and beans and lentils appetizing dishes appeared daily. Soups of many varieties prepared freshly from beriberi-preventing articles were served at lunch and at dinner. The fresh fruits on the table at breakfast and at lunch were from the following: papayas (papaw of the West Indies), bananas of many varieties, watermelons, muskmelons, oranges, limes, mangoes, pineapples, water lemons, coconuts and alligator pears. Very occasionally tinned fruits appeared. There were fresh meat twice and usually fresh fish once daily. For the patients the milk was almost all fresh, but tinned milk is yet used by the well employees. A herd of cows is gradually being formed so that tinned milk is doomed.

For the laborers and second-class patients the same eliminations in regard to rice, macaroni and tinned stuffs were observed and the following diet provided: breakfast, half loaf of bread of white wheat flour, hot coffee, and as much as the man would care to eat of the following: fresh cornmeal porridge, baked or boiled yucca, or baked plantains (cooking bananas). Lunch at 11:30 a. m. and dinner at 6 p. m. were prepared from the following: always a tasty soup of beans, lentils, fish chowder, bouillon, or fresh vegetables; fresh meat once or twice a day, fresh fish once a day, half loaf of bread, and two vegetables from the following: ordinary dried beans and peas comprising six different varieties, and the following fresh vegetables: pumpkins, yucca, Irish potatoes, sweet potatoes, yams, plantains, beans, kale, eggplant and okra. Fresh fruit daily or papayas, bananas, pineapples and oranges has lately been added.

From these lists it is easily seen that previous to November, 1912, the first-class employees, if large bread and pastry eaters with a fondness for rice and macaroni, would easily overstep the danger line of lack of vitamins (neuritis or beriberi preventing principles) which are contained in the bran or inner skin of some grains, beans and peas, fresh vegetables, fresh fruits, fresh milk, eggs and fresh meat.

The laborers with the diet that contained large amounts of white bread, polished rice, macaroni, farina de agua and tinned meats suffered considerably from beriberi, relatively much more so than the first-class employees.

By the changes in the diet, effected since 1912, beriberi has been eradicated from the medical department of the Madeira-Mamore Railway, so that there has not been so much as one case among doctors, nurses or laborers during the past three years. Absolutely the same surroundings have existed at the Candelaria Hospital for the first-class employees, laborers and patients during the past five years, every one always having plenty of fresh air in the quarters, living in screened houses and drinking the same water. The kitchen, screened also, has had no renovation that has modified these conditions.

Beriberi is much less prevalent among the other departments as the ideas of proper food value, demonstrated in Candelaria, are gradually being taken up outside the hospital. In 1913, Mr. Essaba lost 40 per cent. of his laborers on his rubber plantation on the Jaci Parana River from beriberi; that is, many of them died, while those patients that did not succumb were invalided down the Madeira River. The plantation lies two days by launch travel from the Madeira-Mamore Railway line where it crosses the Jaci Parana River. Mr. Essaba, hearing that there was something new in the prophylaxis and treatment of beriberi as practiced at Candelaria Hospital, consulted me. He promised to carry out instructions, and within a few weeks' time beriberi disappeared from his plantation and has not reappeared. The only change he made was in the diet as outlined above.

Since 1912 the treatment at Candelaria Hospital for beriberi has been changed to a strict dietary condition consisting of:

1. Soups of beans and peas, fresh vegetables, fish chowder and eggs.

2. Meats: all varieties, but served in underdone condition.

3. Eggs, usually six daily.
4. Fresh cow's milk several times daily.
5. Irish potatoes, beans and peas and other fresh vegetables.
6. Fresh fruits.
7. Rice bran two times daily.
8. No bread allowed as there is no whole wheat or graham or rye bread to be had here as yet.

Strychnin, one-thirtieth grain, every six hours, by mouth or hypodermically always is given; digipuratum in ampules as indicated.

Formerly, persons suffering from beriberi were immediately sent down the river to the sea as soon as possible; but now, unless there is marked paralysis (and the latter cases appear only among nonemployee patients who live remote from the Madeira-Mamore medical department), they remain at hospital from five days to four weeks and are then returned to work, having been very carefully instructed in regard to diet.

By this changed system of treatment many thousands of dollars yearly are saved the various commercial communities in the avoidance of steamer passages invaliding the beriberi patients to salt water as formerly practiced, an increased security of life is felt by the employees so that they are now willing to remain a reasonable time at their contracted stations, a more normal wage has appeared in place of the very excessive former scale, a great decrease in the number of deaths has been secured and a much increased daily working power has been obtained.

Patients who have been treated for beriberi at the hospital are returned to the same surroundings in which the disease was contracted, and as long as they follow the dietary instructions given them, never return again with this malady. In 1909 the average stay of first-class employees on the Madeira-Mamore Railway was four months. The mortality of this disease at this hospital is now almost nothing, whereas previously it had averaged about 15 per cent.

Since 1912 the medical department has striven to have introduced for the consumption of our employees the unpolished rice for the polished, and wheat flour with the bran not removed, for the common white wheat flour, with also a plentiful supply of rye flour. Shipments of all the foregoing have recently been ordered, and it is expected that within a few months' time beriberi, the disease most dreaded by the inhabitants of the Amazon Basin, will disappear from the list of the ailments suffered by the employees of the railroad.

From observations made in Brazil, it would seem that beriberi must be more common in the United States of North America than the number of cases reported would indicate.

EXPERIMENTS

Farina de agua, with the Brazilians of the Amazon Basin, is more esteemed than bread, and is partaken of in quantity, especially by the laboring classes, at all meals. This product of the prolonged maceration of the wild or poisonous mandioca (*Manihot utilissima*), has been shown by the following experiments carried on by me for the past year with chickens to produce in fowls a condition clinically the same as avian polyneuritis or beriberi. These experiments indicate a very important source of beriberi not usually met in other parts of the world, and never previously mentioned as an additional cause of this disease in Brazil. Probably the fact that the Brazilians suffered from beriberi so much more, proportionately, than the other nationalities in this region was due to the consumption of this farina de agua in addition to their other faulty diet.

Experiments with chickens were conducted at Candelaria Hospital during 1914 and 1915 as follows:

June 7, 1914, four cocks and eight hens, all apparently in good health, were divided into four lots of three birds each and placed in adjoining compartments, one cock and two hens in each division. All compartments were about 8 feet wide, 10 feet long and 7 feet high, and were well ventilated and protected. The chickens had plenty of fresh water at all times.

Lot 1.—Food: Farina de agua solely, moistened and in dry form. Fowls at first ate this food readily, but later with much less appetite.

Cock died July 25, 1914, emaciated, very weak and paralyzed.

One hen died May 2, 1915, emaciated, very weak and paralyzed.

One hen, liberated July 16, 1915, was weak and emaciated, but when last seen, July 28, 1915, was regaining her strength.

Lot 2.—Same diet as Lot 1.

Cock died emaciated and paralyzed, Sept. 1, 1914.

One hen died April 2, 1915, emaciated and paralyzed.

One hen died July 10, 1915, emaciated and paralyzed.

Lot 3.—Food: Farina de agua and Brazilian rice, each on alternate days. This rice is polished, but not highly as is Carolina rice.

Cock died Dec. 27, 1914, emaciated, weak and paralyzed.

One hen died in condition similar to the cock, July 14, 1915.

One hen, alive but very weak and emaciated, liberated July 16, 1915, died July 19.

Lot 4.—Food: Ordinary chicken food such as grass, kale, kitchen scraps, corn, cooked beans, etc.

Cock and one hen remained perfectly well and in good weight throughout. Liberated July 16, 1915.

One hen died suddenly, Nov. 11, 1914; was fat and strong till day of death. Cause of death unknown.

SUMMARY AND CONCLUSIONS

Beriberi in Brazil is the same as found elsewhere.

Its cause is the same lack of vitamins in the food.

Its eradication and cure consist in the furnishing of sufficient vitamins in the diet.

THE TREATMENT OF PARESIS BY INJECTIONS OF NEOSALVARSAN INTO THE LATERAL VENTRICLE*

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Ever since the effect of salvarsan on syphilitic infection was satisfactorily demonstrated, it has been the hope of alienists that paresis, so long uninfluenced by any form of treatment, might be cured or at least ameliorated by this remedy. To this effect many investigators have treated this affection by injections of salvarsanized serum into the spinal fluid and, more recently, into the cerebral fluid under the meninges. Little if any benefit so far has been obtained in reduc-

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* Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints. A copy of the latter will be sent by the authors on receipt of a stamped, addressed envelope.

ing the clinical symptoms of paresis by either of these methods. It is true that the cell count has shown an appreciable diminution, and in some cases there has seemed to be some slight amelioration in the clinical symptoms; but so far nothing of any consequence has been accomplished.

It occurred to us that possibly the injection of salvarsan into the cerebral ventricle might accomplish more. At any rate it could not accomplish less, provided the operation could be safely performed.

In the first patient operated on, Jan. 12, 1915, salvarsanized serum was used. The symptoms of the disease were well marked. Before the operation the spinal cell count was 75, and the ventricular fluid showed 220 cells. The reaction was strongly positive. The technic of the operation and of all subsequent operations will be described later in this paper. The patient bore the operation well; there was no reaction, and he was able to leave his bed in two days. January 26, the second operation was performed. The spinal fluid and the ventricular fluid were both examined, and a remarkable reduction in the cell count was noted. The spinal fluid showed 10 cells, the ventricular fluid 15 cells. In this instance salvarsanized serum as prepared by Swift and Ellis, which was used in the first operation, was not employed. Six-tenths mg. of neosalvarsan was injected directly into the ventricle. There were no disagreeable symptoms following this operation, and the patient was again enabled to leave his bed in forty-eight hours. February 24, the third operation was performed on the same man, and was the exact counterpart of the second operation. Before the operation the ventricular fluid showed 40 cells.

Another patient who also showed well-developed symptoms of the disease was operated on March 18, and in this case the neosalvarsan in the same dose was injected directly into the lateral ventricle. Further operations on this patient were prevented by the patient being seriously burned in a fire at his home, owing to which he had to be removed from our care and subsequently was taken into another state and we lost sight of him.

Having established that the operation could be successfully accomplished, and believing that if any benefit was to be derived at all it could be only in the early stage of the disease, we selected such a subject and performed the first operation, March 12. His reactions were strongly positive. The spinal and ventricular fluids both showed a count of 5 cells; the patient was able to leave his bed in twenty-four hours. The second operation on this patient was performed March 31, and the third operation, April 21. Before the third operation the reaction of the cerebrospinal fluid was negative and of the blood doubtful.

These seven operations are all that we have done, but the method employed by Dr. Sharpe shows that it can be successfully accomplished without any danger to the patient at all. Furthermore, it will be shown in the second part of this paper that the effect of the injection when made into the ventricle has a far wider distribution than when made into the spinal fluid.

In regard to the effect of this method of treatment on the clinical symptoms of paresis, not much can be said at present. However, the third case holds out some encouragement. The man has been under close observation ever since; he has improved mentally and physically, and is able to do work he could not do before. He has become more natural in manner, quieter, and more self-composed. The emotional elements which were so characteristic before the operation have disappeared, and he is certainly better than he was when we first saw him.

Of course it will take many more cases than these to determine whether this operation will accomplish more than is done by the subdural and the spinal methods. We have certainly shown that the operation can be successfully performed, and we believe that further experience with selected early cases will show its decided superiority from a clinical standpoint.

THE INTRAVENTRICULAR INJECTION OF SALVARSANIZED SERUM

This method, the intraventricular injection of salvarsanized serum, we have carried out on three patients on Dr. Hammond's service at the Post-Graduate Hospital, the first injection being given Jan. 12, 1915. We must confess that we were at first somewhat disturbed at placing a quantity of a possible irritating fluid so deep in the brain substance, but when we consider that the ventricles all the way to the fourth are lined with a layer of nonabsorbing cells, there is probably not much to fear from an injection which is not actively toxic. The first patient received salvarsanized serum, three injections; the second, three injections of neosalvarsan, added to serum, according to Marinesco's method, but using only 0.6 mg. neosalvarsan. The third patient received one injection by Marinesco's method. In the next patient we intend to use Ogilvie's serum. While the first two patients have shown definite changes for the better, a statement of the progress at this early date would be valueless. A most surprising thing has been the lack of reaction on pulse rate and temperature. One patient had a temperature of 100.4 with headache for one day following two of the injections, with no change in pulse rate. The others showed no reaction whatever.

METHOD OF INJECTION

Under ether anesthesia, a small skin flap, slightly larger than the trephine used, is made a little in front of the bregma and 2.5 cm. from the sagittal sinus. A button of bone 1.5 cm. in diameter is removed and the dura incised. The slender cannula with blunt point is introduced at a point free from underlying cortical vessels and passed downward and a little backward into the lateral ventricle. The head of the table is lowered, and from 10 to 20 c.c. of fluid allowed to escape. The head of the table is now raised, and a funnel containing the serum is attached to the cannula by short rubber tubing. The fluid enters entirely by gravity and is very slowly introduced. The cannula is then withdrawn and the scalp wound sutured. In the second and subsequent injections the scalp over the trephine opening is infiltrated with novocain, and the ventricular injection is carried out as described above. As the brain is not sensitive, a general anesthetic is not required in second injections. The fluid withdrawn from the ventricle at each injection is sent to the laboratory for complete examination.

It was at first suggested that we introduce the serum by callosal puncture. Foerster and also Ballance,[8] we believe, used this method. But callosal puncture is more difficult to do; there is a chance, though slight, of wounding the sinus or one of the small pial veins which occasionally bridge over to the sinus from the inner margin of the hemisphere. Further, on account

8. Ballance, C. A.: Brit. Med. Jour., 1914, i, 596.

of the higher pressure in the ventricles, the puncture in the callosum remains patent, and much of the serum would follow the cannula out of the ventricle when it is withdrawn. The chief objection to the callosal puncture is that it is not applicable to injections under local anesthesia, the falx, in common with the rest of the dura, being exquisitely sensitive.

These considerations led us to adopt rather the penetration of the first or second frontal convolution which, so far as known, is a silent area.

It may be urged that repeated punctures through brain substance may result in the formation of scar tissue and later trouble. This may be true; yet in a hydrocephalic child on whom ten or twelve tappings of the ventricle had been done through the same area of the brain, at necropsy, macroscopic examination of the punctured area showed no formation of scar tissue, or even that an instrument had traversed it.

COMPARISON OF METHODS

What are the disadvantages of the ventricular method in comparison with the intraspinal and subdural routes?

The intraspinal method is a much simpler procedure than either of the other methods, and requires no anesthetic. But the serum is distantly placed, and on experimental grounds but little of it reaches the cortex.

The ventricular method may be considered a more formidable undertaking than the subdural, though in brain surgery, in skilled hands, ventricular puncture is a minor operation.

What are the advantages, if any, of the ventricular method over the intraspinal and subdural routes?

To determine, if possible, the relative amount of diffusion and rapidity of absorption by the subdural and intraventricular methods of injection, a series of experiments were carried out in the Department of Physiological Surgery of New York University and Bellevue Medical College.

There were six series of experiments, one animal of each series having a solution of trypan blue introduced under the dura and the other into the lateral ventricle. The quantity injected varied from 2.5 to 10 c.c., and the animals were killed at periods of time varying from one hour to seventy-two hours following injection. The two animals of each series received equal quantities of stain, and were killed at the same time. The injections were made to conform in detail to the same procedure on man.

Prof. Douglas Symmers of the Department of Pathology of Bellevue Hospital Medical College examined the brains and the following is his report:

> In the brains injected subdurally, the meninges of the injected side were deeply stained, but the corresponding cortex was only slightly tinged and there was no penetration of the loose tissues lining the sulci. The most deeply stained areas were at the base of the brain posteriorly, the dye having evidently gravitated there in the subdural space before passing through the arachnoid to the subarachnoid space. The hemisphere opposite the site of the injection showed no effects of the stain, either in its meninges or elsewhere. No stain was demonstrable in any of the ventricles. The cervical cord and its meninges were deeply stained, the intensity diminishing as the cord proceeded downward. On microscopic examination, the cells of the brain and cord were found to be unaffected by the dye.
>
> In the brains injected intraventricularly, the stain was found to be well distributed through the meninges and cortex of both hemispheres, including the prolongations into the sulci, and extending forward to the tips of the frontal lobes and the olfactory bulbs. The ventricles themselves, the cerebellum and the base of the brain were deeply stained. In the spinal cord, the stain in the one-hour animals extended only to the midcervical region, but in the eighteen-hour animals, the stain not only penetrated to the cauda equina, but colored the tissues of the intervertebral foramina and the sheaths of the posterior root ganglia. Microscopically, the cells of the cord were unaffected by the dye.

These experiments demonstrate conclusively that solutions placed subdurally have difficulty in diffusing, and are rapidly drained out of the cranium.

Apart from the subject we are discussing, these experiments may supply the answer to the question of the direction of flow of the cerebrospinal fluid. The dog injected intraventricularly with 8 c.c. of stain, and killed in one hour, showed deep staining of both hemispheres, including tips of the frontal lobes and the olfactory bulbs; but the stain extended down the cord only to the midcervical region.

Another dog, under the same conditions, and receiving the same quantity of stain, killed in one hour and twenty minutes, showed the same staining of the brain; but in the cord the stain extended to the upper dorsal region.

A third animal with the same quantity of stain killed in two hours showed the same staining of the brain, and in the cord the stain extended to the lower dorsal region. This was not due to lack of stain, for stain escaped when the meninges were opened at necropsy. It was due to lack of time for the stain to spread, for in the fourth dog injected, under the same conditions, but with less stain, 6 c.c., and killed in nineteen hours, the stain had spread over the brain entirely and over the cord throughout its entire length and along the roots of the cauda. These experiments show, at least in dogs, that the direction of flow of cerebrospinal fluid is from the ventricles up over the cortex and then down over the cord.

What are the advantages, then, of the intraventricular method?

Placing the serum in the lateral ventricles is placing it subarachnoidally at once, and also insures an even distribution over both hemispheres in juxtaposition to the cortical cells before it is drained out of the cranium. Furthermore, the ventricular puncture obviates the lumbar puncture which is necessary in the subdural method, before the serum is introduced. Again, the ventricular method brings the serum in contact with tissues that are not reached by the subdural route, namely, the ventricular system itself, and the base of the brain. That it is necessary the serum should reach all accessible parts of the brain is shown by a case of Cushing and Sladen,[9] who reported the case of a child with cerebrospinal meningitis and subsequent hydrocephalus, in whom "after four months the diplococcus was found to be still living in the dilated ventricles, whereas the organisms had been killed off in the subarachnoid fluid." Also, in our first patient, lumbar puncture gave 75 cells per cubic millimeter, and the next day ventricular puncture yielded 220 cells per cubic millimeter. This may or may not indicate involvement of the ventricles in the disease process.

Finally, as shown by Mott,[10] the perivascular sheath spaces which extend between the neurons deeply into the brain substance, and drain it of waste products, communicate directly with the subarachnoid space. A

9. Cushing, H., and Sladen, F. J.: Jour. Exper. Med., 1908, x, 848.
10. Mott, F. W.: Lancet, London, 1910, ii, 1, 79.

serum, therefore, placed beneath the arachnoid membrane, comes into contact with the brain tissue, and this end is, we think, achieved best by the ventricular method.

How many injections should be given?

We believe that in this we should be guided both by the serology and by the clinical symptoms. But if the serology does not show steady progressive improvement under treatment, one should be guided rather by the clinical symptoms. The number of injections naturally will vary with different patients and according to the extent and the severity of the disease process. An unfavorable reaction to injection has been negative so far in our patients. We intend to gradually increase the amount of salvarsan in the serum, and perhaps in this way reduce the number of injections necessary.

CONCLUSIONS

1. In comparison with the deadly nature of paresis, the hazard of intradural treatment, by whatever method, is of little moment.
2. On experimental and clinical grounds, both the subdural and intraventricular methods are superior to the intraspinal route, in the treatment of paresis.
3. From an experimental and theoretical standpoint, the intraventricular method is superior to the subdural route, and we believe it to be safer.
4. The intraventricular method, with careful technic, and a due regard for the anatomy of the brain and the delicate nature of the tissues one is invading, is, we believe, practically free from danger.
5. If the freedom from unfavorable symptoms so far achieved in intraventricular injection can be maintained, it will be imperative to so treat paresis in its earliest stages, with greater chance of marked improvement and perhaps permanent arrest of symptoms.

THE POSSIBILITY OF RECOVERY OF MOTOR FUNCTION IN LONG-STANDING HEMIPLEGIA

A PRELIMINARY REPORT

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It is well known that in the hemiplegias due to cerebral lesions, there are usually early recoveries of function for different segments when the other acute symptoms of hemorrhage, or embolism, or trauma, subside. The trunk muscles are affected the least in a hemiplegia, and there may be a complete return of voluntary control of them shortly after the cerebral accident. The legs also frequently recover to a great extent, and although in many cases the distal segments may show evident signs of functional impairment, the larger muscles for the thigh and knee movements may be used with a surprising degree of ease and force. Voluntary control of the arm movements is less likely to return; but if there is a return it is, as with the leg, better for the proximal than for the distal elements. These recoveries ensue within a few weeks or months and are normal. They result from the absorption of the clot, or the loss of the inhibition (or diaschisis, to use the term employed by von Monakow). Subsequent improvements also take place, and at times a patient recovers his ability to perform a variety of movements in an apparently normal manner. "After two years no further gain is to be expected."[1] After the early improvement which has been mentioned, "the case will be practically stationary,"[2] and the so-called residual paralyses are to be observed. There are also secondary results. The limb which at first was flaccid may become flexed (in the case of the arm) or overextended (as happens with the leg). In the arm segment, for example, the fingers are flexed, the wrist is flexed and pronated, there is flexion at the elbow, and the arm is adducted at the shoulder joint. These constant flexions result in contractures, with limitation of the possible passive movements at the joints, and the contractures are a deformity. "The appearance of contractures implies lasting functional loss wherever they develop."[2] This is the usual statement of the course of cerebral hemiplegia.

The results of experimental lesions in animals agree with the observations on man, with the exception that the paralyses are not permanent in such animals as dogs, cats and rabbits, and there is some doubt regarding the permanence of functional loss in monkeys and in the higher apes. What difference exists between man and animals appears to be one of degree or completeness of functional loss and of time of motor recovery. In animals the residual symptoms are more commonly those of asthenia, or of ataxia, or of paratonicity, rather than complete motor inabilities and contractures.

A few casual observations made some years ago and results of animal experiments by one of us (F.), together with experimental results of others, suggested the possibility that conclusions regarding the permanency of paralysis from cerebral accidents were neither accurate nor scientifically grounded, and that more attention should be paid to possible improvement in these cases. In order that this view might be put to test, and that any results that might be obtained should not be open to criticism on the score that we were dealing with the normal early recoveries which can be expected in cerebral hemiplegics, the cases which were selected were old cases in which, in accordance with the dictum of neurologists, further improvement might not be expected. All of the patients to a considerable extent, and some to an extreme extent, had developed contractures. It was our object to determine, if possible, whether or not any improvement could be brought about, and if so to what extent. All the cases were selected for us by other physicians, who were asked to send young persons, if possible, but no other limitation was placed on the choice except the ability of the patients to go to the laboratory for the tests. During four months we have had opportunity to work with five patients, who had been committed to this institution and who exhibited different degrees of paralysis and also different mental abnormalities. The arm segment, being the most affected in all cases, was chosen for the treatments.

Three general methods were employed. The first was that of massage and vibration. For the muscles which were strongly contracted effleurage, or stroking,

1. Church and Peterson: Nervous and Mental Diseases, Ed. 8, Philadelphia, W. B. Saunders Company, 1914, p. 223.
2. Church and Peterson: Nervous and Mental Diseases, p. 222.

was employed. The contracted muscles were stroked in order to reduce the hypertonicity, if possible. For the same reason the hand was grasped and the arm shaken or vibrated until there had been a distinct loosening of the muscles. The extensors were also percussed (tapotement) to give them the benefit of the mechanical stimulation, and the nerves of the arm were also stimulated by deep pressure.

All kinds of movements of the arm were also produced passively, when possible, special attention being given to extensions on account of the continued flexions. It was not found possible to pronate or supinate the arm in some cases at first, and the amount of passive extension was limited during the early treatments. In some cases much pain was experienced in these procedures.

The first two methods were employed in order to make possible the third, which was that of trying to get the patients to use voluntarily the extensor muscles in some simple activities. In some cases voluntary movements on the part of the patients could not be obtained for some weeks, but in all cases these were eventually obtained, as is indicated below.

HISTORIES AND RESULTS

Brief case histories of the patients with indications of the results of the treatments are as follows:

CASE 1.—*History.*—Man, aged 58, a former telegraph and telephone lineman, twenty years ago fell from a pole and fractured his skull in the left parietal region. This accident resulted in a right hemiplegia with an epilepsy. Four operations have been performed on him, and a large piece of the skull has been taken away. After some of the operations he became more normal, but was not entirely well. For the past seven years on account of his paralysis, etc., he has been unable to work, although for some time after his accident he was employed as a street sweeper. There are a spastic paralysis of the right side, contractions of the flexors of the forearm and hand, and adduction of the arm. The right ankle is almost immobile. The right side of the face is involved, and saliva drools from the mouth. There is no apparent muscular atrophy. He is aphasic, both motorially and sensorially, for he cannot name objects and his conversation is very limited and he does not appear to understand much that is said to him. The Wassermann reaction with the blood serum was negative. Mentally, there is an almost complete amnesia. He replies to questions regarding his wife, children, business, home, etc., "I forgot it," but he has an oft-repeated series of sentences referring to his condition, which he uses as explanations of everything, and which he says whenever he does not apparently understand. Thus, "I feel all right, I can sleep, I can eat when I can get it, but it's the arm, from here down." He complied with simply expressed requests, but not with more complicated ones. It may be that the apparent sensory aphasia is only a kind of amnesia, the patient forgetting almost immediately what is said to him. After he had been in the laboratory about twenty times he was asked if he had ever been in it, and replied that he had not. He did not remember having had any exercises with his arm. This is a case in which the amount of cooperation was at a minimum, and whatever effects were produced could be referred to the daily work rather than to any efforts made by the patient independently.

Results.—At the time work with this patient began he could not make voluntary movements of his arm, hand or fingers. His arm was bathed daily with hot water an hour before he came to the laboratory. Massage and passive movements were used, and the arm at the shoulder was forcibly abducted by means of a sling connected with a pulley at the ceiling. The first voluntary movement which we tried to get him to make, besides the gross arm movements, was that of opening his fingers after a ball was placed in his hand. The number of seconds which it took to loosen his fingers was noted. At first this movement was almost impossible for him, but after a comparatively few trials he was not only able to perform this movement but was also able to pick up the ball. The time of grasping and of letting go of the ball gradually decreased, although it was observed on more than one occasion when the number of these tests was large, thirty or more consecutive trials on one day, that the later trials took much longer than those at the beginning of the series. Not infrequently also it was observed that the lengthening of the time of grasping would be much prolonged, and there appeared to be a kind of spasm of the flexors. The quickest time for grasping and dropping the ball in ten trials was thirty-seven and a half seconds, but usually the ten trials ranged from sixty to about eighty seconds. The improvement in the ability of this patient to perform those movements on which he had been practiced was very noticeable not only with respect to the time of performance but also with respect to the accuracy of movement. No measure of the accuracy was made, and the conclusions regarding this factor are, therefore, due to the casual observations which we made and are qualitative.

CASE 2.—*History.*—Woman, aged 36, nine years ago during childbirth had an apoplexy, but subsequently bore two children at intervals of a year. She became aphasic at the time of the apoplexy, but has regained some of her speech ability. There is a right-sided spastic paralysis, more marked in the arm than in the leg. At the time the present work began, the forearm was flexed on the upper arm, and the wrist and fingers were flexed with the exception of the forefinger, which was slightly extended. There have been convulsions dating from the apoplexy; although not at first numerous, they occurred as often as eighty-eight times in one month, but recently have been very few in number. The Wassermann reaction with the blood serum on three occasions has been negative, single positive, and trace, respectively. The cerebrospinal fluid was negative; there were 2½ cells per cubic millimeter. Mentally, she was depressed when admitted to the hospital, but has greatly improved, although depression is still present and prominent at times. She gets very angry at her inability to express herself and at her motor inabilities. She cooperated well in the work, doing all that was asked of her, although at times rather surlily.

Results.—When the tests were begun, the patient could not raise the arm voluntarily in any direction without a considerable degree of flexion at the elbow, which with a maximum effort developed into a clonus. Rotation of forearm and extension of the wrist were impossible; wrist adduction and abduction very slight; dynamometric tests of the grip showed no power. Passive movements and the different forms of mechanical exercise of the muscles, especially of the extensors, were performed daily, and the patient was urged to perform similar simple movements voluntarily. The latter were done slowly, in a jerky, uncertain manner, and they often ended in a clonus. The trunk muscles were used to help out the movements of the arm in the performance of a given task, and the larger arm muscles helped out the movements of the hand and fingers. During the efforts to move the paralyzed arm segments, the paralyzed leg frequently went into a clonic state. The ball test used with Case 1 was also used with this patient, and with results of considerable interest. At the time she was first able to grasp and to drop the ball she performed the movements in eighteen and nineteen seconds, respectively (average of three successful trials in ten trials). Subsequently after she had acquired the ability to extend the fingers better, the fingers appeared to be flaccid, and the time for grasping and for dropping the ball greatly increased at first (three to four minutes), but improvement took place gradually and at the present writing she averages four and twenty-five seconds, respectively, in the successful trials for grasping and for dropping, although at times she is able to drop the ball in two seconds. Grip is now slight but apparent with the dynamometer, averaging about 4 kilograms. The patient is able to use a pencil for drawing lines, although not enough coordination is present to have them straight. The other

movements are performed more steadily than at first, and with greater excursions, and they are not accompanied by clonic movements as in the beginning.

Case 3.—*History.*—Man, aged 30, a former soldier, in 1909 when in the Philippines had a fever the nature of which is not known, and owing to this the patient says he became paralyzed and aphasic. At that time the diagnosis of "gumma in the left cerebral hemisphere" was made, but the reason for this definite diagnosis is not clear. At one time the Wassermann reaction with the blood serum was weak, and twice subsequently it was negative. The patient exhibited a typical right-sided hemiplegia with aphasia, although he can to a certain extent make his wants known and can say a few words respecting common objects. There was a hemiplegic gait; the foot was practically useless; the arm segment showed marked contractures. Forcible passive extension at the elbow and wrist and movements at the shoulder could be made only with considerable "crackling" at the joints, and the patient complained of great pain when these movements were extreme. The fingers and hand could be extended only by the application of great force. The aphasia of this patient is largely motor, although he understands some things only after repeated explanations, and he cannot read. Mentally, he is said to be demented; but the aphasic condition may account for this statement because it is difficult to determine how much he knows and how much interest he has in his surroundings. He appears to be in the "moron" class, although on account of the aphasia his mental status is difficult to determine. At any rate, it is certain that his intelligence is slight and that he was poorly educated. He is apparently very lazy and cooperates very slightly.

Results.—For three months this patient had passive movements and massage, but during that time he could not perform any except the grossest kind of movements of the arm. He was unable to grasp objects and to make extensor movements of the hand and forearm, but at the present writing is gradually, but very slowly, obtaining some control both of the forearm movements and the finer movements of the hand and fingers. By using the thumb and the ball of the hand he can hold a tennis ball, and by extension of the thumb he can release it. He can also hold in a clumsy fashion a pencil, and can draw with it lines on a sheet of paper. The lines are made mostly with the larger arm muscles. At first the lines were not continuous, and were similar to the lines which a small child makes. Now, the lines are continuous and are straighter. They show great variations in force by the differences in darkness and breadth. This patient was also practiced on the "piano" board, an apparatus made of contiguous squares which were to be pointed out consecutively by the forefinger, each square by a separate movement. In this exercise the patient cannot use the extended forefinger, since he is unable to extend it sufficiently long for this purpose. His hand is strapped to a board in a normal position, and a cardboard pointer is fastened to the board opposite the index finger. At first he was able to make in five minutes sixty movements with his right hand when it was guided with the sound left hand; later, without the help of the left but with the cooperation of the trunk muscles, he was able to make 112 movements in five minutes, and at the present time, when the sound left hand and the trunk muscle assistance is taken away by strapping him into a chair and restraining these movements, he is able to make 120 movements with the right arm alone in five minutes. No measurements of the amount of movement about the arm joints were made for three months on account of the apparent inability of the patient to perform the movements voluntarily. At the time the first measurements were made, the movements were found to be slight, and after a month all had increased in extent. The following figures give the angular amounts of movement of different kinds, the first figure being the amount after three months' passive movement and massage, the second being the amount of movement after the succeeding one month's daily voluntary efforts. Shoulder: forward, 28 and 98; backward, 25 and 44. Elbow: flexion, 94 and 107; rotation, 0 and 90. Wrist: flexion, 4 and 33; abduction, 16 and 24; adduction, 23 and 41. Grip (by dynamometer) was 4 kg. before and 6.8 kg. after the month's work. All these measurements are averages of five trials.

Case 4.—*History.*—Man, aged 36, had severe headaches in 1907, and later a convulsion with right facial and arm paralysis and aphasia. Several months later there was added a paralysis of the leg. At present there is almost complete right hemiplegia with aphasia. The arm is flexed at the elbow and is spastic and slightly atrophied. Little motion is possible. A year after the paralysis of the leg an attempt was made to get the patient to use the leg with the aid of crutches, but this did not succeed, perhaps owing to the lack of cooperation. The aphasia at the time of the present series of tests was practically complete. He could copy some printed words, but could not say them. He understood practically nothing, and could not repeat what he heard. Mentally, he has varied; usually he is very emotional, and apparently very appreciative of the attention shown him, and he cooperates when he is made to understand by signs what is wanted of him. On account of his lack of speech understanding, it was not possible to determine how much he understood of what was wanted; but his actions in an otherwise normal individual would indicate an overzealousness.

Results.—This patient was practiced on holding and dropping a tennis ball, and on the "piano" apparatus, as well as being treated with massage and passive exercises. Not so much improvement was manifest in this patient as in the others with whom we have worked, but this may be due to the short time that work was in progress with him. Some improvement was noticeable, however, in the time for the performance of the above-mentioned tasks. Work with this patient was discontinued temporarily on account of lack of time, but it is expected that we shall begin again at a later date.

Case 5.—*History.*—Woman, aged 58. The history of this case is very incomplete, for it is not known when the hemiplegia began. It probably began several years ago, since she exhibited contractures. It is stated that she had at different times, "fits," after which she could not properly speak. When she entered the hospital she showed motor aphasia with apraxia.[3] There were evidences of hemiplegia; her gait was a characteristic one; the right side of the face was paretic, and face movements could not be performed properly. The leg could be used, but at the time of her entrance to the hospital she was not able to walk well without assistance. The arm could be used for some of the gross movements, but there was a flexion at the elbow and wrist and fingers. There was hypertonicity of the muscles, and the reflexes on the right were exaggerated. There was no atrophy. The Wassermann reaction was negative. Mentally, she has been depressed on account of her not being able to go home, but during the time of the present work she has been more cheerful. She cooperated best of all the five patients, and was enthusiastic except at those times when the passive movements caused her pain.

Results.—We shall not repeat the data showing the improvement of this patient for the simpler methods of adduction, abduction, pronation, etc., of the different arm segments, for they resemble greatly those of Case 3. The movements of this patient not only became more free but they were also executed with greater ease and rapidity than when the tests began. After about eight weeks of the simple exercises, when she had learned to use the thumb and forefinger together, she was given a piece of muslin turned over for hemming and a needle and black thread to determine her ability to sew. Her movements in doing this work were very awkward at first, as might have been expected, and they were slow. At first also the movements were comparatively large, and this is shown by the fact that she averaged in the first week only 21.2 stitches in five minutes, and these extended over an average space of 122 mm. This work was continued daily for five weeks, and during the last week she averaged 33.5 stitches in five minutes, these stitches

3. A report of this aspect of the patient's condition has been made by A. B. Evarts: Report of a Case of Aphasia and Apraxia, New York Med. Jour., 1914, c, 1193.

covering an average space of 78.5 mm. To practice the extension of the fingers and the combined coordinated movements of the arm and hand she was also given tennis balls to throw into a waste paper basket, which was set against the wall at a distance of about 6 feet from her. The first day she was able to throw into the basket only 2 balls of 25, but after four weeks averaged 15.8 out of 25. Shortly after she had learned to use the hand she was given a fan during the warm weather, and she was urged to use it with her right hand. She grasped the fan properly, but could not make the necessary combinations of hand and arm in her first trials; but in a few days she succeeded so well that she was able to fan herself with the so-called paralyzed arm and hand better than with the left arm and hand.

COMMENT

The results which we have obtained with these five patients show very clearly the possibility of a return of function in a paralyzed segment even after the paralysis has existed much beyond the time limit set by some neurologists for possible improvement. As far as the results from these cases go we have the right to say that the time limit beyond which improvement may not take place cannot be set. Furthermore, there appears at present no indication of a limitation of the quantity of improvement which may be attained by suitable and sufficiently prolonged therapeutic measures. It is also to be noted that these five cases differ with respect to the locations of the cerebral lesions (as far as these can be determined by clinical as contrasted with postmortem examination). One of the cases (Case 1) is doubtless a purely cortical case; another (Case 5) has been diagnosed as cortical, and the other three cases have signs which indicate more plainly capsular lesions. The examination of our records shows that improvement has taken place almost equally well whether the lesion be cortical or capsular.

The underlying causes of the cerebral lesions differ. Case 1 is definitely traumatic; Case 5 is probably arteriosclerotic; Case 4 is definitely syphilitic; Case 2 is probably syphilitic, and Case 3 is only possibly syphilitic. The most marked and quickest improvement took place in Case 5, and the least in Cases 1 and 4. We do not consider that these facts reveal any relation of special disease to the return of function, both because we have too few cases of any one kind for a definite conclusion and because we find great individual differences in cooperation of the patients, which latter fact appears to us to be more important. Since the diseased conditions which we mention, arteriosclerosis, syphilis and traumatism, are the most frequent causes of hemiplegias and other cerebral palsies, it would appear likely that most cases of cerebral paralysis can be treated so that improvement will take place.

Moreover, it should not be forgotten that the patients with whom we have dealt are patients who have been committed to an institution for the insane. They are, therefore, not mentally normal, and we could not expect and, in fact, we did not get the amount of cooperation from them which can rightly be expected from mentally normal patients. Our experience with the rapid improvement of Case 5 leads us to the belief that improvement may be rapid when the active cooperation of the patient can be obtained, but that without this cooperation, or with a minimum of it, improvement may be produced but slowly and to a slight degree. This is shown by the slowness of the patient in Case 3, who has been mentioned as lazy and noncooperative.

The facts which we have given briefly, and which we hope to add to and to publish in full at a later date, point to the conclusion that patients with any kind of cerebral paralysis should not be immediately consigned to the chronic, or incurable, or irrecoverable class, but should be intelligently dealt with just as any surgical case, and the effort should be made to relieve if not to cure. Every effort should be made to put into use with these patients all the means at our command to bring about a restoration of function or at least an amelioration of their helplessness. There appears to be no good reason why the discomfort and the deformity of contractures in cases such as we have worked with should be permitted to exist. Because of its popular pseudotherapeutic connotation we hesitate to use the term "mechanotherapy," but we would urge that properly used massage, passive movements, hot baths and packs, followed or accompanied by attempting to obtain on the part of the patient voluntary muscular contractions, be employed in all such cases. We recognize that treatment of the character mentioned cannot be given by any one, for, to speak only of massage, the ordinary slapping and rubbing which a patient may get at the hands of some well-meaning (but in this respect ignorant) relative or nurse may do more harm than good because the flexors may be stimulated much more than the extensors and the flexor condition be exaggerated. It is necessary to have some knowledge of the muscles involved, to limit treatments to those muscles which should be treated in this manner, and to see that the voluntary movements when they can be produced are directed to improvement in the movements which are in need of improvement. Elaborate apparatus is not needed, for much may be done with common objects which are to be found in any household. The principal requirement is a knowledge of the structures involved and their functional relations, with some ingenuity in the devising of means of bringing about movements of certain characters which should be practiced, and also different means which may help to stimulate the patient's interest and to show plainly to him the course of his improvement.

The facts are also of interest in a theoretical way in relation to our conception of motor cerebral control. If after the so-called motor cortex is destroyed, or the fibers in the internal capsule sectioned, by hemorrhage or by an anemia, there is a possibility of return of motor control, we shall have to modify our conceptions of how the different parts of the brain act in the production of movement. Experimental and clinical results are already at hand to indicate that there are great anatomic and functional differences in different brains and that the relations of the motor cortex to the limbs are not so simple as they have been supposed to be.[4] For recoveries of functions such as we have described there are many possible explanations. The simplest is that we deal not with motor inabilities but with exaggerated asthenias. This is an explanation of some of the motor deficiencies of animals from which the motor cortex has been excised. We should then look on the different forms of cerebral paralysis as exaggerated difficulties of movement and not as inabilities to move. We may also explain the recoveries as due to the assumption by another portion of the brain of the function of the motor cortex and the motor fibers. This was a favorite explanation of the motor recoveries of animals after ablation of the motor area on one side, it being assumed or concluded that the

4. See, for example, Franz, S. I.: Symptomatological Differences Associated with Similar Cerebral Lesions in the Insane, and Variations in Distribution of the Motor Centers, Psychol. Monog., 1915, pp. 16.

other hemisphere assumed the function of motor control on both sides of the body. That this explanation will not hold, in animals at least, is shown by the fact that animals which have recovered motor power of the limbs after the removal of the motor cortex of one hemisphere do not lose this motor ability if the motor cortex of the other cerebral hemisphere be subsequently destroyed. Another possibility is that the cerebral motor cortex may not be necessary for the production of movement but that this cortex is only regulatory. It has been shown that if the motor cortex on one side be excised, a considerable number of the pyramidal fibers at the medulla on that side do not degenerate, and it would seem that, assuming the pyramidal fibers to be wholly motor in function, some of the motor impulses may arise in portions of the brain other than the precentral cortex. The facts which we have already collected indicate that lesions of the motor cortex or of the upper part of the pyramidal tract in man do not abolish function, but put the function in abeyance until such time as the appropriate condition is present for the production of movement. We should probably not speak of permanent paralyses, or of residual paralyses, but of uncared-for paralyses. This we say because many of the conditions which we have met appear to resemble, if they are not real, phenomena of disuse, rather than actual inabilities.

THE MANAGEMENT OF PNEUMOTHORAX OCCURRING AS A COMPLICATION OF NEPHRECTOMY *

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In cases demanding nephrectomy there not infrequently are found conditions external to the kidney itself which make an accidental opening of the pleural cavity very difficult to avoid. Indeed, such injury to the diaphragm may occur in certain instances even under the most expert hand and with the most skilful dissection. It may even occur during an operation of the so-called subcapsular type. The cases in which this accident is most apt to arise are those in which the perirenal tissue has been greatly infiltrated with inflammatory products, thus fixing the kidney closely to its surroundings. Dense adhesions to the diaphragm are more commonly found on the left side, owing to the fact that the kidney is normally higher on this side, and not in close relation to the liver. During the removal of such a kidney, the procedure necessary for exposure may easily make an accidental rent in the diaphragm. This most often occurs at the upper angle of the lumbar wound by traction either on the retractor or on the kidney mass, while an endeavor is being made to deliver the upper pole.

Incision of the pleura may also happen in the presence of a rudimentary twelfth rib, in which case the operator may overlook this rib altogether, and call the eleventh the twelfth. Such a mistake can be avoided by examining the ribs before operation, either on the patient or on the roentgenogram.

While it is true that the pneumothorax caused in the manner referred to is usually small in amount and devoid of any special dangers except those of possible infection, this may not be so in each instance. It seems also to be true that the genito-urinary surgeon is, in many instances, content to sew up the tear in the diaphragm as soon as it is discovered without any attempt closely to formulate to himself just what the possible contingencies of air in the chest may be, and what should be done to meet them.

The severity of the functional disturbances following pneumothorax depends on the size of the opening in the parietal pleura. If no adhesions are present, the lung collapses; but if the hole is smaller than the cross-section of the trachea, it will only collapse slowly, step by step, with each succeeding inspiration. During the time required for this, it is very probable that the inadvertent rent in the diaphragm will have been recognized and closed. But even though the lung be entirely collapsed, in a case in which the hole is smaller than that of the glottis or trachea, the pressure differences on either side of the mediastinum will not be so great as to cause any dangerous lowering of respiratory function in the great majority of cases. Adequate ventilation will be maintained by an increase in the depth and frequency of respiration. There will be no dyspnea or cyanosis, and no special burden thrown on the heart.

It is in those instances in which the wound in the pleural sac is sufficiently large to allow free action of atmospheric pressure, that is, larger than the cross-section of the trachea, that phenomena follow dangerous to life. In such instances the air enters rapidly, and in the side bearing the pneumothorax there results a continuous positive pressure. This compels the mediastinum to bulge toward and from the well side with each succeeding respiration; and it is under such conditions that the active lung cannot expand enough to meet the demands of life. The oxygen supply is diminished while the carbon dioxid is piled up, causing dyspnea and cyanosis of increasing severity.

The latter condition is not very often caused by tears of the diaphragm such as are made in the manner referred to in this communication, though, to be sure, such tears, from the very manner of their occurrence, must always be of indeterminate length and size. But whether the tear be large or small, it is my conviction that conditions within the thorax should be restored to the complete physiologic normal at as early a moment as is conveniently possible. Should the lesion of the thorax be a large one and the patient show alarming signs of deficient ventilation, forceps such as are used for a sponge carrier, or ones with moderately blunt bite, should be pushed into the chest and made to grasp the collapsed lung. By making steady, moderate traction on this, the mediastinum can be supported, and the uninvolved lung given a chance to carry on respiration till the tear can be sewn small enough to relieve the alarming symptoms. The forceps are then removed, and the sewing finished.

Similarly also, a small tear should be closed as soon as discovered. If time permits, it is well to tack a bit of fat or muscle tissue over the line of suture, so as to make air-tight closure more speedy. Closure of the diaphragm being ended, the operator may then proceed with the removal of the kidney; but before the final dressings are applied and the patient returned to bed, or even sooner if symptoms of insufficient ventilation persist, the air in the chest should be removed by aspiration. This is best done by puncture low on the

* From the James B. Brady Urological Institute, Johns Hopkins Hospital.

side in the midaxillary line of the thorax. The trochar should be given a slant to correspond with the arching diaphragm, and suction should be made until, as read by a manometer attached to the aspirator, the chest shows a negative pressure of minus 7 to minus 10 millimeters of mercury. The latter procedure is important because it not only reexpands the lung to its normal position immediately, thus making atelectatic areas through collapse of the alveoli less likely, but also, if bacteria have entered the chest cavity at the time the pneumothorax occurred, these may become circumscribed in their action by the plastic apposition of visceral and parietal layers of pleura.[1]

REPORT OF A CASE OF ESOPHAGO-TRACHEAL FISTULA

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There are two forms of congenital occlusion of the esophagus, one in which the upper and lower parts of the occluded esophagus are united by a fibrous cord, and the other in which the lower portion opens into the trachea or one of the bronchi. The latter appears more usual (Osler).

St. Clair Thomson says that imperforation appears to be an arrest of development rather than a pathologic process in the fetus, while Losee explains the causes of esophagotracheal fistula, embryologically, by the fact that the proximal and distal portions of the esophagus have different sources of origin. The buccal cavity, pharynx and upper extremity of the esophagus develop from the ectoderm, and the intestinal tract, including the distal portion of the esophagus and respiratory apparatus, from the endoderm. Fistulous communications between esophagus and trachea are almost always situated at its bifurcation, and the conclusion may be drawn that the membrane separating the esophagus and trachea close last at this location.

According to statistics collected by McKenzie, sixty-two cases of esophagotracheal fistula have been reported in the literature. Since then Losee[2] has reported two in the new-born.

CASE REPORT

History.—A secundipara was delivered of a full-term female child by Dr. F. L. Day; labor was normal. Within a few hours, attention was attracted to the baby who became asphyxiated and was relieved by removal of large quantities of thick mucus from the mouth. The baby nursed well, but food regurgitated in a very short time, as the infant would gag and choke and seem asphyxiated. Relief was obtained by passing a catheter, sometimes through the nasal orifices and sometimes through the mouth, and removing the mucus. During the last days, the mucus was blood-stained, owing, no doubt, to the passing of the catheter. Meconium was passed for the first three days, but there was no bowel movement on the fourth day and no report of stool on the fifth day. As no roentgenogram was taken, the diagnosis of stricture of the esophagus was made. (Ellis had seen a similar case last year of which no report was made.) The temperature on the fifth day was 102, when the child died of inanition and bronchopneumonia.

No operation was tried because gastrostomy seems to be of no avail, as milk introduced into the stomach is apt to be discharged into the trachea. Holt says, "Complete obstruction in the esophagus is almost of necessity fatal; the patient dying from inanition two or three days after birth." In the case reported by Losee, however, the patient lived for ten days.

Necropsy.—This revealed a full-term child, on appearance perfectly normal except that the nares were filled with clotted blood, owing, no doubt, to the passing of the catheter. The abdominal cavity seemed normal. The intestines were inflated with gas. The stomach was tied off and cut at the pylorus. The esophagus was dissected as far as the trachea. The bronchi were cut at the bifurcation, and the trachea and esophagus removed *en masse*. The lungs showed minute hemorrhages on the surface. A catheter passed through the proximal end of the esophagus showed that it ended in a blind pouch at the fifth tracheal ring from the bifurcation. At the third ring from the bifurcation, the distal end of the esophagus opened into the trachea causing a stricture at this site. Macroscopically, there was apparently no continuity of the esophagus between the third and fifth rings, not even a fibrous cord. The remainder of the esophagus to the stomach seemed normal.

COMMENT

St. Clair Thomson says, "Congenital imperforation of the esophagus is generally regarded as a rare condition, but probably it is more frequent than has been thought, the comparative rarity causing it to be overlooked or symptoms attributed to some other cause."

Symptoms generally manifest themselves early. In this case attention was attracted to the infant in a few hours because of marked accumulation of mucus in the throat with gagging and asphyxiation. Vomiting is the chief symptom, and its occurrence should attract attention if the child is vigorous, if it sucks strongly and eagerly and if ingestion of food leads to coughing and choking.

Not being familiar enough with the minute anatomy of the new-born, we do not feel competent to say that the site of the various dilatations of the trachea change from birth to adult life. According to Braune and Stahel, the trachea is slightly expanded at the bifurcation, while in this case there was a stricture on the posterior wall, internally, below the esophagotracheal fistula. This stricture of the trachea was not due to pressure of the aortic arch, as the arch is normally situated a few tracheal rings above this site.

The probable explanation of this stricture is that there was an overgrowth of cells, either endodermal or ectodermal or a combination of the two, at the junction of the esophagotracheal fistula, causing stricture of the trachea.

1. For detailed information on the subject of pneumothorax the reader is referred to the following:
Garré and Quincke: Lungenchirurgie, Ed. 2, 1912.
Quinby and Morse: Experimental Pneumectomy: the Application of Data so Obtained to the Surgery of the Human Thorax, Boston Med. and Surg. Jour., 1911, clxv, 121.
2. Losee: Bull. Lying In Hospital, New York, January, 1914.

Heat and Bacteria.—Many of the pathogenic organisms can grow only within a very narrow range of heat, and it is remarkable that their optimum temperature should correspond with that of the human blood. Considering their sensitiveness to temperature, it is not surprising that microbes should be affected by climate and season, and even by changes of weather. Most pathogenic organisms take on a more intense activity in hot countries, and their virulence is no doubt affected by excess or deficiency of heat in the individual. It follows from these facts that if the temperature of the human body could be temporarily raised a few degrees, the microbes of many parasitic diseases, if present in the body, would be destroyed, and this is no doubt the "intention" and the effect of pyrexial reactions.—R. Fortescue Fox, *Clinical Journal*, Nov. 3, 1915.

THE DIFFERENTIAL DIAGNOSIS OF LESIONS OF THE LABYRINTH AND OF THE CEREBELLUM *

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In this review we shall confine attention to three symptoms common to lesions in the labyrinth and in the cerebellum, namely, nystagmus, vertigo and ataxia. We shall not attempt to discuss adequately these three symptoms in their various modifications by extension of the disease or its effects to surrounding structures, but shall chiefly consider lesions which are strictly and definitely labyrinthine and lesions which are strictly and definitely cerebellar. We hope thus to be able to emphasize the points common to each and to note essential differences, if any, and thus arrive at the intelligent understanding essential to diagnosis.

When one talks of a lesion definitely labyrinthine and definitely cerebellar one immediately thinks of experimental lesions. As Dejerine[1] has pointed out, clinical lesions are not often confined, so far as their effects go, wholly to the cerebellum. An abscess of the cerebellum is accompanied by the production of toxins which act, through the medium of the circulation, on neighboring or even on remote structures; a new growth in the cerebellum brings about changes in the general intracranial pressure, resulting in changes in the cerebral circulation, and, usually also, in an increased pressure of the cerebrospinal fluid.[2] The increased pressure of the cerebrospinal fluid will in itself often lead to vertigo, quite apart from the destructive effect of the neoplasm, and the physical pressure of the tumor on the medulla oblongata and the floor of the midbrain may give rise to other phenomena not directly related to the structures involved in the lesion. While the clinical picture may be necessary for diagnosis, the experimental picture must not be neglected in drawing conclusions with reference to normal function, and disturbance of function must be the basis for a rational diagnosis.

While much of what is presented here is based on experimentation on animals done by us, it has received sufficient verification in man both in cases we have observed and cases recorded by others — often, as in the case of cerebellar nystagmus, without a full appreciation of the significance of what is recorded.[3]

When we consider how close anatomically and physiologically the labyrinth is to the cerebellum, and when we recall that many of our labyrinthine cases when they come under observation have affected the posterior cranial fossa with more or less involvement of the cerebellum; and that so many cerebellar lesions are complicated by pressure on the vestibular nerve, it is little wonder that the most careful of observations leave us often hopelessly involved. It is for this reason that we feel tempted to try to outline the essential differences of labyrinthine and of cerebellar lesions.

It will be well here to attempt to define the physiologic function of the labyrinth and of the cerebellum. This appears necessary because so much confusion has arisen concerning the primary disturbance and the remote effects associated with lesions in these organs.

The primary function of the labyrinth is to give information of the change of position of the head in space.[4] Its end-organ signals all movements of the head or, more correctly, all acceleration of movement. Rapid changes of aspect of the head in space demand prompt and rapid motor reactions to preserve equilibrium or to break a fall. A moment's thought will lead us to see the wide-reaching range of its reflex associations. Thus it must be in touch with all the mechanism which tends to readjust the body and be able to call into play compensatory movements to maintain equilibrium. There is no other sense organ in the body which will give this information quite so efficiently as the labyrinth, and hence, there is always a certain amount of permanent deficiency of motor response after total loss of the otic labyrinths.

As a result of this we find (1) that the labyrinth is in such direct touch with the eyes that each movement of the head may have, when necessary, such compensatory movements of the eyes as are necessary to maintain the normal relation of the eyes to the horizontal.[5] This, as we[6] have shown, is a direct reflex response independent of the cerebellum, with the probable object of insuring that retinal images shall not be disturbed by each movement of the head. (2) We find that the labyrinth is intimately connected with the body musculature so as to prevent loss of balance. When the usual limit of stimulation of the labyrinth is overstepped there are developed among other symptoms, nystagmus, and a fall to the side of the lesion, or to the side of the less intense stimulation.

The fundamental action of the cerebellum is not so easily expressed nor are investigators agreed with regard to its full significance. Sherrington would place it as the ganglion of the proprioceptors, that is, those end-organs or receptors which are buried in the body and adapted to react to stimuli developed in their neighborhood in the organism itself.[7] It thus becomes a great coordinating center for the proprioceptors, and its destruction renders difficult or impossible the associating of movements directed to the same end.

Babinski says that normally the cerebellum exercises a control action on voluntary movements. Mills[8] expresses his conception thus: "The fundamental symptom in cerebellar disease is asynergy" — defining synergy as "the power or faculty by which movements more or less complex, but functionally definite, are associated in a special act or acts." "Movements are mismeasured, giving dysmetry or hypermetry because the patient with cerebellar disease is unable motorially to associate the different elements of such movements." He quotes with approval Ferrier's idea of the cerebellar activity: "Every form of active muscular exertion necessitates the simultaneous cooperation of an

* Read before the American Otological Society, May, 1915.

1. Dejerine: Semiologie des affections du système nerveux, Paris, 1914, p. 456. Luciani: Human Physiology, London, 1915, iii, 457.
2. Frazier, C. H.: The Cerebrospinal Fluid in Health and Disease, THE JOURNAL A. M. A., April 3, 1915, p. 1121.
3. For example, Stewart and Holmes: Brain, 1904, xxvii, 529.
4. Wilson, J. Gordon, and Pike, F. H.: Some Considerations on the Physiology of the Otic Labyrinth, Arch. Int. Med., December, 1914, p. 911.
5. Sherrington: The Integrative Action of the Nervous System, New York, 1906, p. 337.
6. Wilson, J. Gordon, and Pike, F. H.: The Effects of Stimulation and Extirpation of the Labyrinth of the Ear and its Relation to the Motor System, Philosoph. Tr. Roy. Soc., 1912, cciii, 127.
7. Sherrington: The Integrative Action of the Nervous System, pp. 348 and 130.
8. Mills, Charles K., and Weisenburg, Theodore H.: Cerebellar Symptoms and Cerebellar Localization, Including Kinematographic Observations on Cerebellar Phenomena, THE JOURNAL A. M. A., Nov. 21, 1914, p. 1813.

immense assemblage of synergic movements throughout the body to secure steadiness and maintain general equilibrium." These ideas are fundamentally alike — so we will not be far from the current views when we say that the cerebellum is of importance to correlate such unconscious sensations from muscles and joints as assure the continuity and proper degree of motor activity in all our movements. In our opinion, Luciani's objections to considering the cerebellum as the great central organ for the maintenance of equilibrium[9] have not been satisfactorily met.

Mills classes as special symptomatic manifestations of asynergy, hypermetry adiadokocinesia and tremor. As symptoms resulting from asynergic efforts: asthenia (lack of motor power), atonia and ataxia. Since the loss of strength is never complete, Sherrington[10] characterizes these conditions as parasthenia and paratonia.

One sharp distinction between cerebellar function and labyrinthine function lies in the fact that the cerebellum is an afferent station for the proprioceptive impulses and the labyrinth is not. Impulses simply originate in the labyrinth. The cerebellum lies in one efferent path from the cerebrum to the cord; the labyrinth does not. The labyrinth is a peripheral sense organ.

LABYRINTHINE NYSTAGMUS

Nystagmus occurring as a result of a labyrinthine lesion consists of two phases, a slow lateral deviation, labyrinthine in origin, followed by a quick return movement, cerebral in origin. This idea, expressed by us in former papers, has been confirmed by all our subsequent experiments, still unpublished. On the basis of these experiments, we feel safe in saying that the impulses leading to the quick movement in labyrinthine nystagmus come from the cerebral hemisphere on the side to which the slow deviation of the eyes is directed. The quick movement fails when the cerebral hemisphere to the side of the slow deviation of the eyes is extirpated. These movements are synchronous in both eyes and vary definitely in direction with the labyrinth which is affected. In lesions produced experimentally or due to pathologic processes in the labyrinth, the movements are primarily horizontal, and it is the horizontal movement that is of importance. The rotatory movement apparent at times, so far as our present knowledge goes, does not appear to have much diagnostic value, and insistence on it appears to us to confuse the issue. When observed this rotatory movement is designated according to the direction of the quick movement at the upper end of the vertical iris meridian. In nystagmus, after experimental lesions, the rotatory movements are of secondary importance and are most noticeable very early and again as the nystagmus is passing away.

In experimental work the deviation is always to the side of the lesion. We have never seen a case in which the deviation was to the side opposite the lesion so long as one labyrinth remained intact. At first there is at times a slight vertical action, especially on the side of the lesion, the eye deviating slowly down, but even here it tends to the side of the lesion. This stage, however, passes in a few hours. As has been noted elsewhere,[11] in the very early stages the deviation can be made to go to the side opposite the lesion by mechanical pressure.

An important question here arises as to whether we ever have a labyrinthine lesion with deviation away from the side of the lesion, that is, with the quick phase to the side of the lesion. Theoretically, it is easy to reply that in the early stages of acute labyrinthine disease we have a serous effusion into the osseous labyrinth resulting in an irritation or stimulation within the semicircular canals which will produce such a deviation and nystagmus. All the observations we have made leave no doubt in our minds that the normal stimulus for the end-organ is pressure. But the pressure which arises in the course of a labyrinthine effusion is diffuse and different from the pressure arising from the definitely directed physiologic pressure of the fluids in the canals. The pathologic effusion in such a small confined cavity rapidly becomes general, if it be not so from the first, and results in a depression of activity. We have no evidence that generalized pressure will act on the nerve terminals to cause an irritative lesion.

In a serous labyrinthitis the effusion may be into the perilymph or the endolymph. On general principles one would say that the evidence at present shows that in many cases the increase is in the perilymph, especially in cases which result in complete recovery. In serous labyrinthitis the deviation is to the side of the lesion, the quick phase is to the sound side. In the cases recorded with the slow deviation to the sound side during the course of an acute or chronic otitis media or following a mastoid operation but without the presence of a fistula, the opinion of Alexander[12] is that this indicates the period of irritation, presumably from serous effusion into the labyrinth. It appears to us, however, that such cases are more correctly to be regarded as an irritation of an inflamed vestibular nerve, which inflammation may be outside the osseous labyrinth. In the cases of nystagmus to the diseased side which we have observed occurring either during the course of an acute otitis media or after a mastoid operation, the deviation away from the side of the lesion had occasionally such additional symptoms (pain over the region of the fifth nerve, or paresis of the sixth or seventh) as pointed to some distinct involvement of the petrous temporal.

There is an interesting table given by Ruttin[13] of the direction of the quick phase of nystagmus. He there tabulates two varieties of labyrinthine lesions in which *on looking to the right or to the left* the general rule of slow deviation to the side of the lesion is not followed. These are (1) circumscribed labyrinthitis in which the quick phase is directed to the diseased side or to the sound side or to either side — to the right on looking to the right, to the left on looking to the left, and (2) diffuse suppurative latent labyrinthitis in which also the quick phase is directed to either side on looking to that side.

In circumscribed labyrinthitis the irregularity of the nystagmus is associated with a membranous labyrinth more or less intact but with a fistulous opening in the bone. Ruttin[14] thus exemplifies it: "A patient with chronic middle-ear discharge has complained for some time of vertigo and perhaps also of tinnitus. On examination there is more or less deficiency of hearing but not complete loss, the fistula test is positive, the caloric reaction is present, spontaneous nystagmus is

9. Luciani: Human Physiology, London, 1915, iii, 448, 466.
10. Sherrington: In Schaefer's Textbook of Physiology, 1900, ii, 903.
11. Wilson, J. Gordon, and Pike, F. H.: The Effects of Stimulation and Extirpation of the Labyrinth of the Ear and their Relation to the Motor System, Philosoph. Tr. Roy. Soc., cciii, 127-160.
12. Ruttin: Klinik der serösen u. eitrigen Labyrinth Entzündungen, Vienna, 1912, p. 83.
13. Ruttin: Note 12, p. 39.
14. Ruttin: Note 12, p. 35.

present, and often toward both sides, that is, on moving eyes to right or left voluntarily." In the diffuse suppurative latent labyrinthitis we have a mechanical irritation of the nerve often associated with caries of the petrous temporal.

The explanation in these chronic cases of this irregularity in the labyrinthine reaction on looking to the side is not very obvious, but we suggest that it is due to irritation of an inflamed vestibular nerve. A suggestion of Luciani[15] is perhaps applicable here. Claude Bernard, in his experiments on the nerves of recurrent sensibility, was unable to get his most pronounced sensory effects on stimulation of the peripheral portion of the ventral nerve roots immediately after the nerve roots were exposed in the spinal canal; the sensory effects were noticeable only when stimulation was made at least one hour after the nerve roots were exposed. Bernard attributed this delay to the time required for the recovery of the nerve trunks from the shock resulting from division of the ventral roots. Luciani is not inclined to credit this hypothesis of shock, but inclines to the belief that the nerve trunks become more sensitive to stimulation in the course of a few hours because of the development of the inflammatory reaction in the exposed nerve roots. It is common knowledge that inflammatory processes in the joints or elsewhere often render the nerve endings of affected regions more sensitive to mechanical pressure, but it is equally well known that specialized nerve endings, for example, the olfactory endings, suffer early from inflammatory processes. While it is possible that the vestibular nerve trunks might be rendered more susceptible to stimulation by the development of the inflammatory reaction along their course, inflammation within the ampullae would be more likely so to injure the cristae acusticae as to alter the normal threshold for pressure from the canals as a stimulating agent. Under such conditions, it may be that head movements or increase of pressure in a localized area, which normally would not produce vestibular irritation, may become an efficient cause of vestibular irritation.

We believe that the nystagmus in both directions, namely, in looking to the right the quick phase to the right, the slow to the left, and in looking to the left the quick phase to the left and the slow to the right, can be best explained by our hypothesis of two distinct sets of nerve fibers in the vestibular nerve for reasons already given. This hypothesis, as we have already explained, is based essentially on Lee's findings that the differences in direction of movement of the eyes varies with the intensity of mechanical stimulation of the vestibular nerve endings, and our own observations on the results of stimulation when but one labyrinth is present.

According to this hypothesis the vestibular nerve contains two groups of nerve fibers functionally distinct:

(a) A numerous group of fibers excited by a strong stimulus turning the eyes to the opposite side.

(b) A less numerous group of fibers more easily excited and hence affected by a weaker stimulus turning the eyes to the same side.

In an inflammation of the left vestibular nerve both sets of fibers are affected and stimulated. On looking to the left, a cerebral act, the left internal rectus and the right external rectus are relaxed so far as cerebral impulses are concerned. The labyrinthine impulses are, however, still coming in to these muscles since there is no reason to suppose that cerebral action has any effect on the inflammation along the course of the vestibular nerve.

Sherrington[16] has shown that electrical stimulation of the cortical area for movement of the eye muscles will, as an example, bring about contraction of the left external rectus and the relaxation of the left internal rectus, and that the mechanism for the inhibition of the antagonistic muscles is subcortical. From this it will be seen that the suppression of the quick phase in labyrinthine nystagmus on voluntarily turning the eyes in the direction of the slow phase is associated with the relaxation of the opposing muscles whose tension we believe is the primary cause of the quick movement. In any case of cortical relaxation or inhibition of a muscle, the relaxation is never complete, and the muscle is never slack. A skeletal muscle always gapes when cut transversely. In the lesions under consideration (say of the left labyrinth), in looking to the left the stimulus coming to these relaxed fibers from the stimulation of one set of fibers from the left labyrinth causes a contraction of these muscle fibers and a slow movement to the right. Similarly, in looking to the right the left external rectus and right internal rectus are relaxed so far as cerebral impulses are concerned and the stimulus from the other set of left labyrinthine fibers causes a slow movement to the left. There thus results a double nystagmus on directing the eyes to the right or the left.

We have so far only considered pressure on the terminal organ in the labyrinth. In lesions involving the vestibular nerve intracranially, causing pressure on or irritation of the nerve, there may be a deviation away from the side of the lesion. Many of the so-called deviations of nystagmus are cerebellar or jointly cerebellar and labyrinthine and as such do not come within the scope of this paper.

CEREBELLAR NYSTAGMUS

We have much to learn concerning cerebellar nystagmus. For instance, we do not know sufficiently accurately the localities in which lesions may occur, yet be associated with no nystagmus; we have not sufficient data to differentiate between an irritative and a destructive lesion. There are numerous experiments which show that cortical irritation of the cerebellum with the electrical current produces no effect so long as care is taken to limit the excitation to the cortex. Luciani, Risien Russell and Horsley have shown that stimulation of the dentate nucleus produces deviation of the eyes to the side of the nucleus stimulated.

The various articles descriptive of cerebellar nystagmus appear to us to be lacking in that clearness and definiteness which we are arriving at in labyrinthine nystagmus. Here one is trammeled by observations made in cases which are not definitely cerebellar as well as by lack of appreciation of some of its characteristics. We do not propose to present more than one quotation to exemplify this, and this we take from the school which has done much to advance the clinical applications of the physiologic facts although, it must be confessed, with some violence to these facts. Neumann[17] in his work on cerebellar abscess says:

15. Luciani: Physiologie des Menschen, Jena, 1907, iii, 309; Human Physiology, London, 1915, iii, p. 204.

16. Sherrington: Proc. Roy. Soc., London, 1893, liii, 412.

17. Neumann: Otitic Cerebellar Abscess, London, 1909, p. 18.

The focal symptoms of disease of the cerebellum are due, on the one hand, to lesion of Deiter's nucleus and the afferent and efferent tracts, and, on the other hand, to lesion of the secondary tracts, which belong to the same side of the body, and stand in relation to the co-ordination of muscular sense. The lesion of Deiter's nucleus produces vestibular nystagmus, vertigo, and vestibular ataxia. . . . As regards nystagmus, this is always of a rhythmical character, and shows on the whole the characteristic of a vestibular nystagmus, thus according with the description given by Bárány. The differentiation of vestibular nystagmus of cerebellar origin from that originating peripherally in the semicircular canals is made on the one hand by careful functional testing of the vestibular apparatus, similar to that carried out by Bárány in our clinic; whilst, on the other hand, the course of the disease and the accompanying symptoms assist in the diagnosis.

If the description here given sums up the current opinion of cerebellar nystagmus we cannot agree with it. Exception has to be taken to each paragraph. If the first sentence means anything it means that cerebellar nystagmus is due to lesions of Deiter's nucleus and appears based on the erroneous idea that the labyrinthine nystagmus is dependent on an anatomic course through the cerebellum. This we have shown is erroneous. So far as the second is concerned of course a lesion of Deiter's nucleus will produce vestibular nystagmus because, as has been shown, it lies on the central path between the afferents from the ear and the efferents to the eye. We do not believe that cerebellar nystagmus shows on the whole, the characteristics of labyrinthine nystagmus. Unfortunately this teaching has formed the basis for most of our text book articles. It lacks sound anatomic and physiologic basis and is not in keeping with experimental results. More than that it is not in keeping with exact clinical observations.

Experimental work early impressed on us that if there be one thing characteristic of cerebellar nystagmus it is that it is not comparable to labyrinthine nystagmus. It differs from it: (a) in uniformity of direction, and (b) in character.

Some years ago we stated that cerebellar nystagmus was essentially ataxic and we have seen no reason to alter that opinion. Its distinctive feature is its character — its oscillatory nature approaching toward an ataxia of the eye muscles. With the animal at rest it is lessened or may disappear. It is increased by fixation — especially at the beginning and during the intensity of the fixation. In other words, it is to be regarded as an asynergia. Behind glasses, when the patient ceases to focus, it tends to become less marked, and here again differs from labyrinthine. This is in keeping with what has been said above in regard to the known function of the cerebellum. A lesion here will produce an incoordination of movement; and movements of the eye muscles offer no exception.

In direction the slow deviation may be away from the side of the lesion though it may be to the sound side, depending on whether we are dealing with an irritative or destructive lesion. But it tends to be irregular in the plane of its direction with the head at rest.

VERTIGO

Vertigo, as we have stated elsewhere,[18] is the confusion resulting from the coming into consciousness of afferent impulses concerned with orientation in space which ordinarily are associated (integrated) but now for some reason have become dissociated. We will not concern ourselves here with the variety of sensations which are embraced under the term vertigo, the majority of which are too indefinite to be of value in diagnosis. We will only refer to vertigo associated with the sensation of rotation. It is well to emphasize that in vertigo we are dealing with a subjective sensation and as has been said elsewhere[19] "One notes how difficult it is to get a distinct history of subjective sensations even from intelligent patients, and further, how much less reliable are the subjective sensations of apparent movement of external objects."

The law applicable to apparent rotation following stimulation or destruction of the labyrinth is that apparent rotation of oneself is always in the direction of the rapid phase of nystagmus. There is not the same unanimity in regard to the apparent rotation of objects. "In postrotary visual dizziness Bárány sees the visual field oscillate from side to side in both directions; whereas Mach, Breuer, Delage and most other observers see it whirl contrariwise to the preceding actual rotation and Helmholtz saw it whirl sometimes with and sometimes contrary to, the direction of the preceding rotation."[20] Our observations confirm the findings of Holt that as a rule the postrotatory apparent rotation of objects is contrariwise to the preceding actual rotation, that is, in the direction of the quick phase of nystagmus. If no nystagmus be present the apparent rotation of self points to the side of the lesion.[18]

Less uniformity exists in cerebellar cases. On this point careful observations were made in a series of forty cases of tumors involving the cerebellum by Stewart and Holmes.[21] The direction of the subjective movements were so constant that they were led to regard this as of serviceable diagnostic value. They found that:

(1) In both intracerebellar and extracerebellar tumors the sense of displacement of external objects in front of patients is from the side of the lesion to the opposite side. Thus if the tumor be on the left side, the apparent movement of objects is from left to right.

(2) In intracerebellar tumors the subjective rotation of oneself is always from the side of the lesion to the healthy side, that is, in the same direction as the apparent movement of external objects.

(3) In extracerebellar tumors the subjective rotation of oneself is always from the healthy side toward the side of the lesion, that is, in the opposite direction to that of the displacement of external objects.

It will be noted that the apparent displacement of external objects is similar to that generally occurring in labyrinthine lesions and that the apparent rotation of oneself varies with the position of the tumor. The relationships in intracerebellar tumors are the same as in labyrinthine lesions. The diagnostic importance of the direction of subjective movements in cerebellar lesions has been questioned,[22] but even if not generally applicable they offer suggestions of value to aid in the diagnosis.

ATAXIA AND DISORIENTATION

When we talk of ataxia we mean incoordination of movement—a disturbance in the particular organ itself. When we talk of disturbance of orientation we mean that the organism has a special mechanism

18. Wilson, J. Gordon, and Pike, F. H.: Vertigo, THE JOURNAL A. M. A., Feb. 13, 1915, p. 561.

19. Wilson, J. Gordon, and Pike, F. H.: Note 18, p. 563.
20. Holt: On Ocular Nystagmus and the Localization of Sensory Data During Dizziness, Psychol. Rev., November, 1909, p. 388.
21. Stewart and Holmes: Brain, 1904, xxvii, 525.
22. Lewandowsky: Handbuch der Neurologie, Berlin, 1910, i, 843.

which adjusts the normal relationship of the body and its movements to its position or change of position in space. The organism has numerous peripheral organs which signal in any change of position in a particular part—the ear, eye, muscles, joints, etc. As the head is the most important segment of the body, so without doubt the labyrinth and the eyes are the most important receptive organs for the sensations necessary for orientation. This is seen in the difficulties our labyrinthineless dogs have in walking with the eyes bandaged and the difficulties that deaf mutes and labyrinthineless dogs have in swimming. In the latter case, in the absence of contact with solid bodies and in a medium in which appreciable differences of external pressure are excluded, the labyrinth is the only agency capable under all conditions of giving adequate information of the change of position of the head in space. The action of the eyes is apparently less general and slower but this we will discuss more fully in a later paper.

All these inflowing messages have to be correlated to produce a harmonious action of the whole organism—and probably the cerebellum is one organ which participates in this. This correlation no doubt involves the afferent fibers which the cerebellum receives from the vestibular nerve, and its very close relationship with the vestibular nuclei in the pons and medulla. While it is probable that the cerebellum participates in the integration of the impulses from the labyrinth with others from the periphery into the higher uniform function of maintaining a given orientation in space, yet certainly the cerebellum is not the sole central organ for orientation. In passing it may be noted that it is this disturbance with the inflowing impulses from the periphery that is the scientific basis of attempts to localize particular cerebellar areas.

In both cerebellar and labyrinthine lesions there is a deviation to one side in walking — to the side of the lesion if it is unilateral. With the eyes open the patient corrects this; with the eyes shut, he may correct it, but usually, and especially in cerebellar cases, corrects too much, and then deviates to the sound side. This deviation has nothing to do with ataxia. It is a disturbance of orientation in space, is involuntary and appears in its most pronounced form in animals. The sensation of such involuntary movements which is common in cerebellar disease must correspond to objective involuntary movements.

When we consider the disturbances of orientation and the ataxia common to cerebellar and vestibular lesions we find, as the most obvious symptom, that the patient stands with the feet spread wide apart, that there is inability to stand on one foot, that the gait is uncertain and that the body tends to turn to the right or the left. A discussion of the variations of muscular strength or of muscle fatigue does not come within the scope of this paper.

Labyrinthine lesions differ from cerebellar (1) in the existence of Romberg's sign in labyrinthine lesions; (2) variations in the attitude of the head influence the lack of equilibrium of the body in labyrinthine and not in cerebellar lesions; (3) an affection of the labyrinth does not definitely involve those movements of isolated parts which result in dysmetria; (4) in labyrinthine disease movements of rotation or disorientation are not so readily perceived.

(1) Romberg's sign: The disturbances of equilibrium during walking and standing are increased, in labyrinthine disease, by shutting the eyes. Suppression of visual control does not have the same effect in cerebellar lesions. Sight is of less use to the cerebellar patient in maintaining the erect position although probably of some use and there are said to be cerebellar cases in which Romberg's sign is positive,[23] but as Dejerine insists, they are rare. Romberg's sign is rare in destructive lesions of the cerebellum, as atrophy or sclerosis; rather frequent in abscesses, tumors, or in lesions which affect other structures in their vicinity, and one may seriously question whether, in the cases of which Bárány speaks, the cerebellum alone is involved, either directly or indirectly. In labyrinthine disease standing on one foot is more difficult, especially on the foot on the side of the lesion. This, however, is of no value if the patient has a peripheral sensory disturbance.

(2) Relation of the attitude of the head to the disturbances: (*a*) Goltz and Ewald showed many years ago that the pigeon deprived of its semicircular canals is not able to maintain its balance if the position of the sustaining base is changed. This experiment has been repeated by many workers in other animals, and on it is based von Stein's goniometric test. This consists in placing a patient with bandaged eyes on an inclined plane, the slope of which may be varied. It is found that in labyrinthine cases the patient does not perceive, or perceives but slowly, the changing inclination of the plane and lets himself fall. (*b*) In labyrinthine lesions the direction of falling, with the patient in the Romberg position, bears a direct relation to the plane of the nystagmus. Bárány has elaborated certain rules to show how the attitude of the head and the quick phase affect the fall; but, as we pointed out some years ago, there is a general rule for all positions of the head, namely: that the patient falls in the direction of slow phase of the nystagmus. And, as we have shown, even with the cerebellum injured, the labyrinthine reaction, nystagmus, attitude and falling, can be elicited by labyrinthine stimulation. As Bárány pointed out there is not the same connection between the direction of nystagmus and the direction of falling in cerebellar affections.

(3) Lewandowsky[23] says that the particular character of cerebellar ataxia is the disturbance in standing and walking, "*Störung der Aufrechten Haltung und des aufrechten Ganges.*" This results in those oscillations, that drunken gait, the titubation vertigineuse of Duchenne, so characteristic of cerebellar disease and not seen in labyrinthine lesions. Further, the cerebellar patient shows dysmetria; his movements lack their proper proportion or measure in time and space; they are too rapid and too abrupt and miss their aim; the initial impulse is too strong, the speed too great, the arrest too late.

The ataxia apparent after labyrinthine removal is due to a failure of the proper adjustment of the muscles necessary to the maintenance of equilibrium and orientation, owing to a failure in the accurate perception of the change of aspect of the head in space. To put it briefly we might say that whereas the cerebellar ataxia is dynamic the labyrinthine is chiefly static.

(4) We have sufficiently referred to the fact that in disease of the labyrinth the movements of orientation and disorientation are not perceived so readily. On this subject no more remarks are called for at this time.

23. Lewandowsky: Handbuch der Neurologie, Berlin, 1910, i, 842.

In this discussion on the differential diagnosis of labyrinthine and of cerebellar disease we have not referred specially to the fact that in labyrinthine disease the physiologic action of the labyrinth can be shown, by the usual caloric and rotation tests, to be lost. This fact we feel is so appreciated by neurologists and otologists that it is not necessary to dwell on it.

We have, therefore, in pure labyrinthine and pure cerebellar cases sufficient data at our disposal to decide the question of differential diagnosis. It is difficult in the mixed cases. If, however, we can exclude with these data the purely local labyrinthine and the purely local cerebellar we have gone some distance to locate the lesion, and can proceed intelligently to cases that involve both structures.

THE RELATION OF HEAT TO SUMMER DIARRHEAS OF INFANTS *

ADRIEN BLEYER, M.D.

ST. LOUIS

From observations that have been made on laboratory animals, diarrhea would not appear to be one of the characteristic effects of heat. Dorlencourt and Schreiber produced death in dogs by exposing them to high temperatures without observing diarrhea. Von Salle observed that diarrhea might or might not occur when young puppies were exposed to high temperatures. Aron subjected monkeys to the direct heat of the sun, and caused death without observing diarrhea. Hiller, in tabulating a large number of so-called heat-strokes in man, found that diarrhea occurred in less than half.

That heat is capable of disturbing physiologic health may, however, be admitted. Disturbances in man may occur at temperatures of 75 F. (Rubner). Disturbance of the normal respiratory exchanges denoting acceleration of the rate of metabolism has been noted at about this temperature (Sutton). If moderate exercise is taken, symptoms of heat retention may occur at 78 F. (Haldane). As the environmental temperature rises, heat production becomes less (Langlois). A rise in body temperature may be produced by heat (Kleinschmidt, Heim, Genersich, John). Acetone and blood may appear in the urine, suppression of urine or even anuria may occur, there is a fall of blood pressure, the pulse rate rises, and the body surface becomes hyperemic, to be followed by pallor, unconsciousness and shock, completing the well-known picture of "heat-stroke."

In the case of infants, these observations have peculiar significance because of the much greater surface area of the infant compared to body weight than is the case with the adult and the correspondingly greater need for rapid loss of heat. This is in the proportion of about 3:1. That metabolism is more rapid in infants than in adults is shown by the relatively larger gaseous exchanges, the carbon dioxid coefficient normal to the adult rising in the infant almost to a point corresponding to the differences in surface area. That the heat output of infants increases as the weight decreases was shown by Langlois, and more recently by Murlin and Hoobler in the case of weak and atrophic infants. The latter writers found this difference greater in the second half of the first year than in the first half. Variot and Lavialle observed that clothing may interfere sufficiently with heat-loss to be noted by the calorimeter. This point,

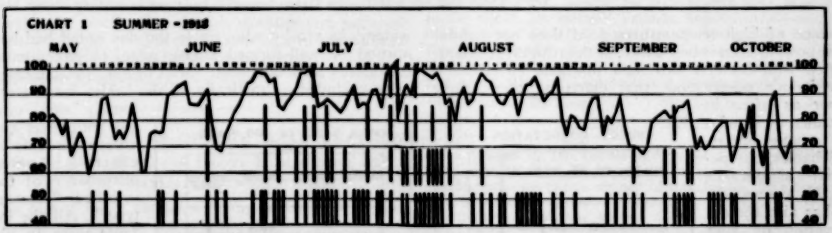

Chart 1.—Diarrhea and temperatures, 1913. In this chart and Chart 2, the irregular horizontal line denotes maximum daily temperatures from May 1 to October 15 (U. S. Weather Bureau, St. Louis). Each upright line at the lower margin indicates a case of acute diarrhea on a certain date; additional cases are indicated by lines added above.

TABLE 1.—SUMMARY OF CHART 1, SUMMER OF 1913, EIGHTY-SIX ONSETS

Temperatures	No. of Onsets	Per Cent.
From 60 to 70	3	3.5
From 70 to 80	8	9.3
From 80 to 90	30	34.9
From 90 to 100	45	52.3

TABLE 2.—SUMMARY OF CHART 2, SUMMER OF 1914, ONE HUNDRED AND THIRTY-SIX ONSETS

Temperatures	No. of Onsets	Per Cent.
From 60 to 70	5	3.7
From 70 to 80	16	11.8
From 80 to 90	46	33.8
From 90 to 100	69	50.7

TABLE 3.—SUMMARY OF CHARTS 1 AND 2, SUMMERS OF 1913 AND 1914, TWO HUNDRED AND TWENTY-TWO ONSETS

Temperatures	Onsets, Per Cent.
From 60 to 70	3.6
From 70 to 80	10.8
From 80 to 90	34.2
From 90 to 100	51.4

TABLE 4.—PERCENTAGE INCIDENCE COMPUTED ON A BASIS OF ONE HUNDRED DAYS

Temperatures	Onsets, Per Cent.
From 60 to 70	11
From 70 to 80	14
From 80 to 90	29
From 90 to 100	46

* From the Department of Pediatrics, Washington University Medical School.

* Read before a meeting of the St. Louis Medical Society, May 31, 1915.

concerning the dangers of overclothing in summer, was the substance of a study by Helmholz, in which it was found that infants possess a capacity of withstanding high atmospheric temperatures provided they are not overburdened with clothes.

It is not possible to say whether or not diarrhea is one of the symptoms of heat disturbance. Very likely it is not, and it would seem that if a child who is suffering with what has been called heat retention is not fed, he will probably not have diarrhea; but if he is fed, and under such circumstances does have diarrhea, it would seem that the heat retention rather than the food was the cause of the diarrhea, because in the summer of 1914 an additional 136 cases were collected, sixty-two of them, I wish gratefully to acknowledge, by Dr. T. C. Hempelmann.

In collecting the cases, we were as careful as we could be to satisfy ourselves as to the health of the babies on the days preceding the disturbance of the bowel. Only those babies previously well for at least two weeks were recorded, and if the onset of diarrhea had occurred more than two days before being reported by the mother, no record was made of it. As to what constituted a diarrheic attack, five or more stools in one day in a baby accustomed to not more than two or three, or four stools, if definitely thin and watery, in a baby who, up to the day noted had had normal or well-formed stools, were, in either case, considered an acute onset. Mild or questionable cases were excluded. Practically all the babies listed were acutely sick, usually with fever and other symptoms of gastro-intestinal disturbance of the so-called "summer type." All the infants were in the first two years of life; about 80 per cent. were in the first year.

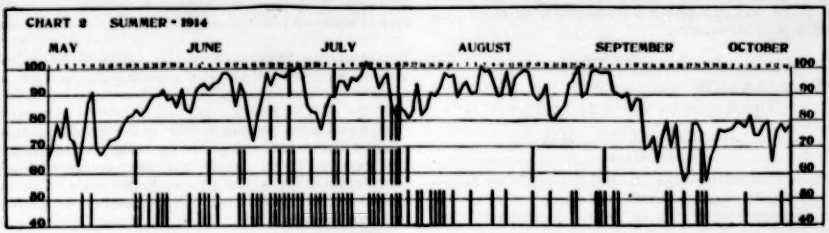

Chart 2.—Diarrhea and temperatures, 1914.

absence of high temperatures food does not exhibit this power, even when more or less highly contaminated with bacteria and their products (Rietschel). Liefmann's observation, that diarrheas occur three times as often in summer as in winter among breast-fed babies, has peculiar significance in this connection, as has also the observation of Holt and Park that diarrheas among tenement babies occur with great frequency among those fed condensed milk, which is not ordinarily considered a highly contaminated food.

Because of these somewhat contradictory observations a study was undertaken to determine whether or not, among the babies of the poor, a relation between the higher temperatures and the day of onset of diarrheas could be made out, no regard being paid to the feeding of the infants until the data collected had been summarized. In the summer of 1913, eighty-six instances of acute diarrhea were collected in which the day of onset could be satisfactorily obtained.[1] In the summer of 1914 an additional 136 cases were collected, sixty-two of them, I wish gratefully to acknowledge, by Dr. T. C. Hempelmann.

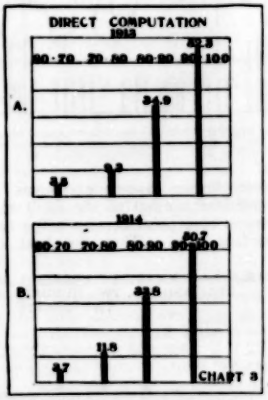

Chart 3.—Diagram showing the relation of heat to the onset of diarrheas among dispensary infants in St. Louis (Tables 1 and 2).

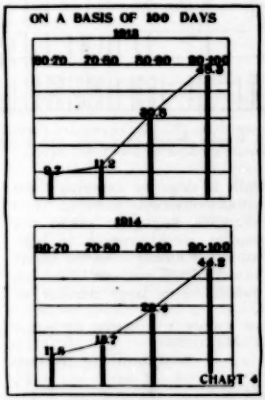

Chart 4.—Diagram showing that the relation of heat to the onset of diarrheas was not due to a coincident number of hot days (Table 4).

Summaries of Charts 1 and 2 are found in Tables 1 and 2, and a summary of the two summers in Table 3. By comparing the two summers, a singularly consistent relation between the higher temperatures and the day of onset of the diarrheas is seen. Apparently, this becomes evident at 70 to 80, it is much stronger at 80 to 90 and quite marked at 90 to 100.

After these charts had been drafted, the question arose as to whether the frequency of the diarrheic onsets was not really the result of a corresponding frequency of hot days. The number of days at each respective temperature-group was therefore placed on a common basis of 100 days and, by preserving the

1. The 1913 work was reported at a meeting of the St. Louis Pediatric Society, June 12, 1914, but was reserved for publication until the work of another summer could be added to it.

ratios originally found, the effect on the incidence of onsets was again determined. Table 4 shows that this was not the case.

SUMMARY

The studies reported in this paper in no way furnish evidence pertaining to the manner in which the influence of heat is exerted. They do show, however, in a large series of dispensary infants (222) developing acute attacks of diarrhea, that there was a direct relation between the degree of temperature and the onset of the diarrhea, over half (51.4 per cent.) of the babies becoming ill on days when the temperature was 90, although there were but 31 per cent. of such days in the two summers.

The observations were made among babies of the poor among whom diarrheas in summer are very prone to occur. Most of them were rationally fed, usually on some mixture of certified milk when breast milk was not available. It was especially interesting to find that thirty of them (13 per cent.) were exclusively breast-fed, and that twenty-two more were partially breast-fed, which is evidence that heat may very well influence the baby who is taking clean food. The knowledge gained of home conditions was not thorough enough to be worth tabulating, although home visits were made by nurses in practically every case. The reports of the nurses agreed very well with observations made at the clinic that a great majority of the babies were overburdened with clothing and suffered as do the babies of this class from lack of cleanliness and the usual surroundings of poverty.

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A CASE OF VARICES OF THE MALE URETHRA

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We wish to report the following case which is of interest on account of its rarity and case history.

History.—E. M. G., aged 46, married, passenger brakeman. General history of no importance. No history of hemophilia. Twenty years ago he had gonorrhea once, followed a few years later by stricture, for which perineal urethrotomy was done. He has had sounds passed at intervals since, followed by no reaction.

Present History.—July 28, 1914, while lifting a train box on a train he felt sudden pain in the region of the urinary bladder, followed by a desire to urinate. He voided urine, but as the act of urination was performed in the dark, he does not know whether any blood was passed. A few minutes later he noticed his clothing in the neighborhood of the genitals was damp, and on investigation found it quite bloody. He urinated five or six times during the night of July 28, without pain; noticed clotted blood at first followed by clear urine and then pure blood. He kept towels around the genitals for dressing and says that four towels were saturated with blood during the night.

Examination.—The patient entered the hospital the following day, at which time we were called in consultation by Dr. John G. Hayden, his attending physician. He was anemic, and bleeding was independent of urination. His hemoglobin, as reported by Dr. Hayden, was 70 per cent. He exhibited no tenderness or pain over the renal region, bladder or urethra. The prostate was slightly enlarged but not hard or nodular. Clots presented at the external meatus and despite the administration of 10 c.c. of normal horse serum several hours previously by Dr. Hayden, stripping of the urethra provoked active bleeding.

After cocainization with a 2 per cent. solution containing quite a fair percentage of epinephrin, a cystoscope, 23 French, was introduced with slight difficulty. The use of the cocain solution was by reason of the fact that previous use of instruments had caused him much pain. The reason for the use of epinephrin is obvious.

Cystoscopy revealed no diseased condition in the bladder or posterior urethra. No clots were present and from neither ureter was any blood being passed.

After withdrawal of the cystoscope, the Mark urethroscope was passed with some difficulty to the bulbous urethra. On withdrawal of the tube nothing was found, with the exception of some areas of hard infiltration, until the anterior part of the scrotal urethra was entered.

In the region of the penoscrotal juncture on the roof of the urethra, a peculiar appearance was noted. An irregular, soft mass of a reddish-black color was seen projecting into the canal as a distinct tumor. This color disappeared entirely under air inflation, and irregular striae were noted, becoming yellowish under pressure, with the exception of one point near the center, which retained the color of intense congestion. On close observation this was seen to be a small tear or rupture in the mucosa. On alternate distention and release of air, it became clear that the striae were vessels which were emptied of their blood under distention, and which immediately filled up on release of pressure. The point of rupture was unquestionably the source of hemorrhage. The desire to urinate was beyond doubt caused by the filling up of the anterior urethra with clotted blood, with subsequent back pressure.

There can be no question that the mass observed was a venous angioma.

But two cases of varix of the male urethra have, in so far as the search for material extends, been reported—one by Klotz (*New York Med. Jour.*, Jan. 26, 1895) and a case of Young's reported by Fowler (*Johns Hopkins Hosp. Rep.*, xiii, 91, 1906). The reports in full of these cases are given by Lewis and Mark ("Cystoscopy and Urethroscopy," p. 205).

626 Lathrop Building.

Transfusion by the Citrate Method in a Sixty-Hour-Old Baby with Melena Neonatorum.—In view of the interest manifested in the citrate method of transfusion, the following case is worth reporting: A girl baby, weighing 8 pounds, was delivered with low forceps because of an incompletely rotated head. The delivery was made without difficulty and with no apparent injury to the child. During the first fifty hours, the child was irritable and cried. It then passed a small amount of bright blood from the bowels, and three hours later a larger amount of dark blood, at which time it was given a subcutaneous injection of normal horse serum. During the next seven hours eight or ten stools were passed composed exclusively of dark blood. The ears were colorless, lips and finger-nails cyanotic, and the child was having difficulty in breathing. The median basilic vein of the baby was raised through a small incision, and 60 c.c. of citrated blood were injected with a record syringe and needle. The child's color was noticeably improved in both the ears and the lips, respirations were easy, and for the next two hours it slept. During the next few hours two more stools of dark blood were passed, evidently that remaining in the bowel at the time of transfusion. From that time recovery was uneventful. The blood used in transfusing was prepared by placing in a sterile container 10 c.c. of sterile 2 per cent. sodium citrate solution and adding to that 100 c.c. of blood removed from a vein in the father's arm with a syringe and needle. The father's veins were small, and the needle introduced did not allow blood to escape rapidly enough, so a syringe was used to facilitate matters, the blood being immediately mixed with the citrate solution.—H. WOLTMANN, M.D., Mansfield, Ohio.

Morbid Introspection.—The movements of the body machinery do not often rise into the consciousness of the normal man, but are a continuous moving picture show to the neurasthenic.—*Monthly Health Letter.*

New Instruments and Suggestions

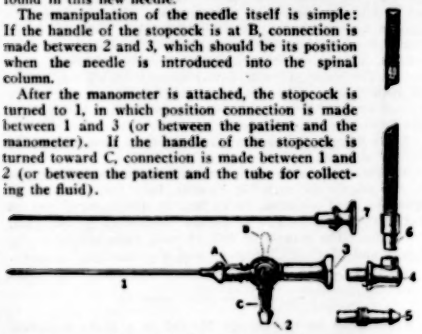
AN IMPROVED LUMBAR PUNCTURE NEEDLE

JULIAN MAST WOLFSOHN, M.S., M.D., SAN FRANCISCO
Instructor in Neurology, Leland Stanford Junior University, School of Medicine

Since intraspinal medication is becoming such an important adjunct in the therapeutics of syphilis of the central nervous system, accuracy and ease of administration of the drug used are all important. Therefore a modification of the lumbar puncture needle described by me in THE JOURNAL, April 19, 1913, p. 1204, has been perfected. This new needle has many advantages over the old, in that: (1) an assistant is not needed to hold the manometer; (2) there is a three-way stopcock which rotates through only 180 degrees, and (3) the administration of intraspinal medication is facilitated. The special features of the former needle are to be found in this new needle.

The manipulation of the needle itself is simple: If the handle of the stopcock is at B, connection is made between 2 and 3, which should be its position when the needle is introduced into the spinal column.

After the manometer is attached, the stopcock is turned to 1, in which position connection is made between 1 and 3 (or between the patient and the manometer). If the handle of the stopcock is turned toward C, connection is made between 1 and 2 (or between the patient and the tube for collecting the fluid).



Improved lumbar puncture needle.

For injection the Lüer syringe is inserted directly into 4, or if another container is used, it is connected by rubber tubing to 5, which is inserted into 4, and the fluid allowed to flow by gravity into the subdural space.

2502 Fillmore Street.

A POLYCHROME STAIN WITH ADVANTAGES OVER THE GIEMSA*

FRANK A. MCJUNKIN, M.D., BOSTON

Numerous modifications of the Romanowsky stain have been used in microbiology and hematology. Of these the Giemsa stain is useful in the staining of smear preparations for spirochetes and protozoa, while the Leishman, and Wright's modification of the Leishman are of greater value for the staining of blood.

In the stain described here, the method of ripening the methylene blue used by Novy and the method of obtaining solution of the dyes used by Giemsa are made use of. It has the advantage over Novy's method that a single permanent solution is used, and over Giemsa's method that the stain is of greater intensity and much less expensive.

THE ROMANOWSKY STAIN

A solution of eosin and methylene blue, made by adding an aqueous solution of eosin to a freshly prepared aqueous solution of methylene blue, stains nuclei blue and cytoplasm red. However, when the solution of eosin is added in the right proportion to a slightly alkaline methylene blue solution that has stood for a number of days or that has been heated, the staining is different. The nuclei of the cells treated with such solutions are red, while the cytoplasm is blue. This color reaction characterizes the Romanowsky solution and all subsequent modifications of it. The structures of smear preparations stained in this way not only show a beautiful color differentiation but they are also heavily stained. This color differentiation and the intense staining of structures make the stain of the greatest value in the study of protozoa and other organisms.

The staining characteristic of such ripened alkaline methylene blue solutions was noted by Romanowsky in 1891, and since then a very large number of modifications of his method of preparing the staining solution have been described. The red staining of the chromatin material by polychrome solutions received several explanations, and by some investigators was ascribed to a single chemical compound to which the term "azur" was applied. More recent chemical investigation indicates that more than a single compound formed by the action of dilute alkalies on methylene blue has this property.

THE GIEMSA STAIN

Giemsa states that he has prepared in a pure form the substance that stains the chromatin red, but the method of preparation, so far as I know, has not been published. It may be purchased from Grübler & Co. and their agents under the name of Azur 1. The Azur combined with methylene blue and eosin and dissolved in methyl alcohol and glycerin gives a single solution which, when added to water, makes an excellent polychrome stain. The Azur 1 and the solutions made from it are expensive, but the simplicity of their application and the good results obtained have led to their extensive use.

THE NOVY STAIN

A method of preparing polychrome methylene blue has been devised by Novy and used in the bacteriologic laboratory in the University of Michigan for the past ten years. One gm. of methylene blue (Grübler's B. X.), 0.25 gm. of sodium carbonate (anhydrous), 50 c.c. of twice distilled glycerin and 50 c.c. of distilled water are placed in a 500-c.c. beaker provided with a mechanical stirrer. The temperature is then raised to 88 C. by heating with a Bunsen burner and kept between 87 and 89 C. for one hour while the solution is constantly stirred at the rate of about 200 revolutions per minute. During the heating, distilled water is added in sufficient amounts to make up the loss from evaporation, and the solution finally made up to the original 100 c.c.

The polychrome methylene blue prepared in this way is placed in a dropping bottle, "A," while a 1 per cent. solution of methylene blue in 50 per cent. glycerin is placed in a second dropping bottle, "B," and a one-half aqueous solution of eosin in a third bottle, "C." At the time of making each stain, about 9 drops of "A," 7 drops of "B" and 2 drops of "C" are added to 15 c.c. of distilled water. The number of drops of each must be ascertained for each new batch of polychrome methylene blue solution. Excellent results may be obtained by this method. The polychrome methylene blue solution steadily changes on standing, as the methylene blue is in a slightly alkaline aqueous solution.

THE POLYCHROME STAIN FOR PROTOZOA DESCRIBED HERE

In this stain the polychrome methylene blue, the methylene blue and the eosin are combined in a single solution by using methyl alcohol and glycerin as solvents. In this way there is obtained a single solution which is used like the Giemsa, which stains nuclear material more intensely than the Giemsa solution, and is less expensive and easily prepared. (The stain already prepared may be obtained from Bausch & Lomb Optical Company, Rochester, N. Y.)

In preparing the polychrome methylene blue solution, first measure accurately from a buret into a 500 c.c. beaker 50 c.c. of deci-normal sodium carbonate. The carbonate solution is titrated against a standard acid using as an indicator a 1 per cent. alcoholic solution of methyl red and diluted until there is no factor. To the carbonate solution add 1 gm. of methylene blue (Grübler's B. X.) and 50 c.c. of glycerine

* From the Pathological Laboratory of the Boston City Hospital.

(Merck U. S. P.). The glycerine may be measured in a 100 c.c. graduate. Place the beaker in a water bath and equip with a mechanical stirrer which is run at the rate of about 200 revolutions per minute. A thermometer is placed in the solution in the beaker and the temperature raised to 87 to 89 C. where it is kept for one hour and thirty minutes. The water in the bath outside the beaker should be regulated at 94 to 96 C. At the end of forty-five minutes, add 20 c.c. of distilled water to the stain. At the end of the hour and thirty minutes, remove the beaker from the water bath and pour its contents while warm into a 100 c.c. graduate. Add 5 c.c. of distilled water to the beaker to remove any carbonate that may have precipitated out and pour this into the graduate also. Let the stain stand in this graduate and measure into a second graduate enough methyl alcohol (Merck reagent or Kahlbaum acetone free) to make the total volume 100 c.c. when added to the stain. This methyl alcohol is poured from the second graduate into a 4-ounce bottle and 0.75 gm. of methylene blue (Grübler's B. X.) and 0.25 gm. of eosin (Grübler's yellowish water soluble) added to it. Shake the bottle to secure solution of the methylene blue and the eosin in the alcohol. After the dyes are completely dissolved in the methyl alcohol, pour the polychrome methylene blue solution from the graduate into the bottle. The volume of dye in the bottle is now 100 c.c. The weights of the dyes must be accurate and the glassware free from acid.

In using different samples of eosin (Grübler's yellowish, water soluble), a preparation is occasionally met with that is not satisfactory. The stain made with such an eosin stains the red blood corpuscles a blue that cannot be washed out with water. For this reason it is preferable to use an eosin that has previously been found satisfactory in making polychrome staining solutions.

METHODS OF USING THIS STAINING SOLUTION

Application to Smears for the Demonstration of Protozoa and Bacteria.—Smear preparations may be made on either slides or cover-glasses, and they may be fixed in a variety of ways; but fixation in equal parts of absolute alcohol and ether for from ten minutes to a number of hours gives, perhaps, the best results. Distilled water is placed in a staining dish, and to this 1 drop of the stain per cubic centimeter of the water is added. Cover-glass preparations are floated on the solution as soon as the dilution is made, and stained for from thirty to sixty minutes. Trypanosomes, for example, are well stained at the end of half an hour, while about one hour is required to stain *Spirochaeta pallida* heavily. The preparation is removed from the stain, and any excess of blue is washed out with distilled water. This may require from one to several minutes in order to bring out the pink color in red blood corpuscles. After washing, the preparation is dried in the air and mounted in acid-free balsam. Slide preparations are best stained by inverting them and allowing the very end of the slide to rest on the end of an oblong Petri dish without cover (a dish the length and width of a slide and about 2 cm. high). The slide is placed in the solution in this way so as to bring the preparation side as near to the surface of the stain as possible. The preparations after staining and washing are dried in the air, when they may be examined directly with oil, or they may be mounted in acid-free balsam.

Application to Sections of Tissue for the Demonstration of Protozoa, Bacteria, the Megakaryocytes of Bone Marrow, Etc.—It is more difficult to obtain Romanowsky staining in tissue preparations than in smears. The tissue is cut into pieces not more than 2 mm. thick and placed in 1 part of absolute alcohol and 2 parts of saturated aqueous solution of mercuric chlorid for at least twenty-four hours, or it is fixed in 10 per cent. dilution of liquor formaldehydi. If the latter is used as the fixative, shrinkage during the imbedding process should be reduced to a minimum. Sections not more than 3.5 microns are cut from paraffin blocks, and if mercuric chlorid-alcohol was used as a fixative, the mercury is removed with iodin. The staining is carried out just as in the case of smears, except that the preparations are allowed to stain over night. After staining, the preparations are washed with distilled water for one minute, and with a cloth or filter paper the excess of water is wiped from the slide or cover-glass about the preparation, which is then dehydrated in xylene containing 5 per cent. of absolute alcohol and 1 per cent. colophonium. The solution in a small dish is renewed several times until by agitation all the visible water is removed from the preparation, which is allowed to remain in the solution from three to six hours until the desired differentiation is obtained, after which it is passed through two changes of xylene and mounted in acid-free balsam. If the nuclei are not the proper red color and there is an excess of blue in the preparation, the slide is placed in the sunlight for several hours, as has been recommended by Mallory.

Application to Blood Films. A Polychrome Stain for Blood.—For the routine staining of preparations of blood, the method should be simple and quick and yet bring out all the structures present. For these reasons the stain described above is not applicable to blood films for the usual differential counting of the white cells, inasmuch as the preparation requires separate fixation and prolonged staining. If this stain is at hand, however, it will be found that an excellent blood stain that is permanent may readily be prepared from it. (The stain already prepared may be obtained from Bausch & Lomb Optical Co., Rochester, N. Y.)

A majority of the samples of commercial polychrome blood stains obtained, do not give the polychrome staining; the nuclei of cells are bluish when films are stained with them in the usual way. Such stains do not bring out the "azur" granules of the endothelial leukocytes. These deficiencies are due in part at least to a failure to adjust properly the reaction of the staining solution. To differentiate the cells that are found in the blood stream, a stain that gives uniform results should be used. The reaction of the polychrome blood stain here described is accurately determined and the staining properties of all samples examined up to the present are constant.

To prepare the Polychrome Stain for Blood, place in an acid free bottle 50 c.c. of the Polychrome Stain for Protozoa and add 250 c.c. of methyl alcohol (Merck Reagent or Kahlbaum acetone free), 0.34 gm. of eosin (Grübler's yellowish, water soluble) and 2 c.c. of half-normal hydrochloric acid (measured accurately from a buret).

To apply the blood stain, the alcoholic solution is placed on the slide or cover-glass in sufficient amount (two drops for a cover-glass and eight drops for a slide) to cover completely the unfixed film for one minute, when twice as much distilled water as stain is added and allowed to act for five minutes. The preparation is washed with distilled water, dried in the air and examined directly with the oil immersion, or it may be mounted in balsam. The red blood corpuscles stain an orange. The leukocytes are well differentiated. The nuclei of all the white cells are red. The cytoplasm of the lymphoblastic cells is a robin's egg blue and free from granules (unless the preparation is overstained); that of the endothelial leukocytes has a trace of blue and a number of reddish-staining granules, while the cytoplasmic part of the neutrophils has no blue and is thickly studded with the neutrophil granules.

Exhausted Orange Peel for Chronic Constipation.—At a recent meeting of the Societé de therapeutique, G. Rosenthal stated that exhausted orange peel had been used with success in the French army for the mechanical treatment of chronic constipation as a substitute for agar-agar. Fresh orange peel is boiled for half an hour in water. The decoction is decanted, and may be used for flavoring mixtures or liquid dentifrices. The marc is then again boiled for thirty minutes in a fresh portion of slightly sweetened water, drained and dried on a plate, when it is ready for use. In addition to the mechanical action of the swelled cellulose giving the necessary consistence to the contents of the alimentary tract, it also stimulates the flow of bile.—*Journal de pharmacie et de chimie*, 1915, xii, 234.

Therapeutics

ANGINA PECTORIS

The chief indications in the management of angina pectoris, aside from the treatment of the attacks themselves, are to remove every possible cause favoring the onset of the attacks and to treat the disease of which angina is frequently found to be only a manifestation. Soca for a long time has been convinced that the absorption of toxic products during metabolism is an etiologic factor of importance in the pathogenesis of all functional troubles of the heart and of the aorta. This conviction led him to question whether this might not also apply to the attacks of angina pectoris, and to the employment of what he calls the "detoxicating" treatment for their prevention. The results of this treatment answered his question in the affirmative and convinced him that intoxication is always present in angina pectoris. His position is that this theory is in no way contradictory to the accepted theories of the etiology of the disease, but that it supplements them.

During the last ten years Soca[1] has seen 123 anginal patients, eighty of whom have been followed for a sufficient time to warrant therapeutic conclusions. At the beginning of the treatment, in a few severe cases, bloodletting or wet cupping was used. Amyl nitrite was used in a few cases for the relief of a severe attack, but neither of these procedures comprises a part of the regular treatment. Nitroglycerin and the nitrites were not used at all, and no special treatment for hypertension was given except in syphilitics and patients with atheroma. In such cases potassium iodid was used.

Whenever the underlying disease causing the trouble could be discovered, it was of course treated. The other treatment consists of diet, diuretics and rest.

For the first day the patient who has a history of angina pectoris attacks is given nothing but water. On the second day milk is given in quantities varying from 1½ to 3 quarts. Nothing but milk is allowed for from one to three weeks, according to the severity of the case and the response to treatment. In the milder cases, at the end of a week, soups made of milk and various kinds of cereals are added and continued for one or two weeks. At the end of this time cooked vegetables without salt are added and continued for a month or two. Then eggs and a small amount of meat are allowed. Milk still remains the basis of the diet, and no salt is added to the food. This remains the permanent diet, except that it is discontinued for one week each month, during which time milk alone is taken. If attacks recur, the milk diet is resumed at once. Some diuretic was always given, such as theobromin salt.

Absolute rest was not found to be necessary in any but the severest cases. Moderate exercise, including walking, was allowed, but insistence was laid on the avoidance of hasty exertion.

At the end of the first week of this treatment, or before that time, pain had invariably been diminished or had stopped. Twenty per cent. of the cases showed no further amelioration. In the others (80 per cent.) there was decided amelioration, and in more than half of the cases there was relative or absolute cure, as shown by freedom from attacks even after exertion.

It is well known that sudden emotion and overexertion are among the most frequent immediate causes of attacks of angina. This is probably due to the fact that they cause a sudden increase of arterial tension. Huchard pointed out that any medication which reduced arterial tension usually relieved, to a greater or less extent, the sufferings of patients afflicted with angina. While Soca calls the treatment he suggests a "detoxicating" treatment, it is also one which tends permanently to lower the high blood pressure usually present. It is rational and quite in line with the best modern treatment of high blood pressure, which attempts to lower this pressure permanently or at least to keep it from increasing by hygienic and dietetic measures, aided by the use of as little vasodilating medication as possible.

NEURASTHENIA—SUPRARENAL INSUFFICIENCY

The suggestion that neurasthenia, like hysteria, needed explanation, and that many of the symptoms of this condition could be explained by a subsecretion of the suprarenals was made by Osborne,[1] in several discussions on the subject of internal secretions, and was distinctly described by the same author[2] in an article published in 1910, in which he says, "It is possible that neurasthenic conditions and conditions of chronic low blood pressure, without tangible circulatory excuse, may be due to an undersecretion of the suprarenals." Recently, Tom A. Williams[3] has described what he terms the "syndrome of adrenal insufficiency," which is really a form of nervous tire or nervous prostration, or, in more recent years, the fashionable "neurasthenia." Williams thinks that the term neurasthenia is only "a convenient cloak for failure to investigate a case sufficiently." In other words, there must be some tangible cause for the prolonged or persistent condition once called nervous prostration and now neurasthenia.

It must, of course, be allowed that physical tire may cause circulatory weakness and prostration, and that mental tire may cause sleeplessness, loss of appetite, and thus a marked insufficiency in the recuperative power of the body without perhaps any special disturbance of any organ or gland. On the other hand, persons who are always neurasthenic, always subnormal, without any special disease, should be subject to classification even more readily than is the neurotic individual. The typical neurotic generally has, if not always, disturbance of the thyroid gland. The typical neurasthenic probably generally has disturbance of the suprarenal gland on the side of insufficiency. The blood pressure in these neurasthenic patients is almost always low for the individuals, and their circulation is poor. Often the activities of the internal organs are impaired, although there may be no discoverable organic disease. Mental exertion, even the simplest, often causes so much weariness and exhaustion as to be prohibitive; that is, such exertion must be forbidden. A vasomotor paralysis, often present, allows chillings, flushings, cold or burning hands and feet, drowsiness when the patient is up, wakefulness on lying down and hence insomnia. The nutrition may

1. Soca, F.: Note sur le traitement de l'angine de poitrine, Arch. d. mal. du coeur., August, 1915, p. 237.

1. Osborne, O. T.: The Therapeutic Application of the Organic Extracts, THE JOURNAL A. M. A., March 23, 1901, p. 796; Med. News, New York, July 12, 1902; ibid, April 4, 1903.
2. Osborne, O. T.: Disturbances of the Internal Secretions Clinically Considered, THE JOURNAL A. M. A., Feb. 26, 1910, p. 670.
3. Williams, Tom A.: The Syndrome of Adrenalin Insufficiency, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2203.

be fair or even good, and the weight may be normal. There may be more or less tingling or numbness of the extremities.

There is not much doubt that the cause is disturbance of one or more internal secretions, but just which glands are at fault is difficult to determine. Testicular and ovarian disturbance, especially on the side of deficiency, are known to cause general depression, hysteria, hypochondriasis, melancholia and disturbances of the digestive secretions. A disturbance of the thyroid secretion may cause in one patient hysteria and in another patient depression; or both conditions may occur in the same patient at different periods. That very large mammary glands, in women who are not pregnant and who are not lactating, may disturb the system has not yet been proved. Many girls and women, however, who are not well and strong, whose flesh is flabby, who may either be overweight or underweight, and who have the mammary glands excessively large, may be disturbed by an internal secretion of which we as yet know little. Pituitary disturbance may affect the cerebral activity. The pineal gland seems to have an important secretion. Many of the symptoms of physical and mental tire, with low blood pressure, especially if accompanied by increased pigmentation anywhere on the skin, may be due to insufficiency of the suprarenals.

Williams comes to the conclusion that many patients who present the well-known symptoms termed "neurasthenia" with low blood pressure, with loss of mental elasticity, with both mental and physical depression, with the fear that they cannot now accomplish their usual good mental work, with the story that they have "lost their nerve," in the phraseology of the times, with the fearfulness of making wrong decisions, and with a vascillating and indecisive frame of mind, are many times suffering from an insufficiency of the suprarenals. He finds that the administration of the dried suprarenal gland, in tablets of from 2 to 4 grains, two or three times a day, has caused improvement in many cases.

Any sensible suggestion is worthy of trial in this troublesome neurasthenia, especially as such patients readily acquire the sanatorium habit and become more depressed. Physical and healthy mental exercise is good for these patients. Generally an increased protein diet does them good, as many of them have been, for one reason or another, reducing their meat, fish and egg intake.

It should be urged that for the supposed suprarenal insufficiency it is not sufficient to give the blood-pressure-raising substance of the suprarenals, but the whole gland must be fed. Just how much valuable activity is absorbed from the suprarenal when fed has not been determined. Cases are on record in which feeding of this gland has seemed to cure or cause an amelioration of the symptoms of Addison's disease. Williams in many instances has found the blood pressure raised by the administration of this glandular substance by the mouth.

As the posterior lobe of the pituitary gland has been found to furnish a stimulant to the suprarenals, it might be well to consider administering a small dose of this gland in conditions of subsecretion of the suprarenals, especially as this part of the pituitary furnishes a vasopressor substance.

As yet we have not sufficiently recognized the fact that all of the internal secreting glands may be subject to the same conditions of hypersecreting and undersecreting which are so well recognized as occurring in the thyroid gland. It is quite probable that many unexplained cases of hypertension are due to an increased suprarenal secretion, and it certainly seems more than likely that the condition of chronic hypotension is due to a subsecretion of the suprarenals.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

SEROBACTERINS (See N. N. R., 1915, p. 329).—The following dosage form has been accepted:

H. K. Mulford Co., Philadelphia.

Scarlatina Strepto-Serobacterin, Mulford (Therapeutic).—(Sensitized Scarlatinal Streptococcic Vaccine).—Marketed in packages of four syringes, containing, respectively, 250 million, 500 million, 1,000 million and 2,000 million killed sensitized streptococci.

QUININE DIHYDROCHLORIDE.—Quininae Dihydrochloridum, $C_{20}H_{24}N_2O_2.2HCl$.—The dihydrochlorid of the alkaloid quinine.

Actions, Uses and Dosage.—The same as those of other salts of quinine. Since quinine dihydrochloride is a very soluble salt of quinine, its use has been proposed where concentrated solutions of quinine are wanted, as for subcutaneous injections and similar purposes.

Ampules Quinine Dihydrochloride, Mulford, 0.24 Gm.—Each ampule contains 0.24 Gm. (3½ gr.) quinine dihydrochloride in 1 Cc. of sterile solution. Prepared by H. K. Mulford Co., Philadelphia.

Ampules Quinine Dihydrochloride, Mulford, 0.5 Gm.—Each ampule contains 0.5 Gm. (7½ gr.) quinine dihydrochloride in 1 Cc. of sterile solution. Prepared by H. K. Mulford Co., Philadelphia.

Quinine dihydrochloride occurs as a white powder, having a very bitter taste. It should be kept in well closed containers, protected from light. It is soluble in about 0.6 parts of water and in about 10 parts of alcohol at 25 C. It is almost insoluble in chloroform and ether. Its aqueous solution is strongly acid to litmus.

Quinine dihydrochloride responds to the usual identity tests for quinine and chloride. It should be practically free from sulphate and from barium.

PURIFIED TRICRESOL, Mulford.—A mixture of isomeric cresols, corresponding closely to Cresol U. S. P.

Manufactured by H. K. Mulford Co., Philadelphia. No U. S. patents or trade-marks.

Purified tricresol, Mulford, is soluble in 50 parts of water at 25 C.; it is free from bases, such as pyridine, and from hydrocarbons. Its phenol coefficient, determined by the U. S. Hygienic Laboratory method, is not less than 2.5 (the exact value is stated on each package) and of a phenol toxicity, determined by the method of Hale, not greater than 150 per cent. (the exact value is stated on each package).

IODOSTICKS (Iodine 60 per cent. and Potassium Iodide 40 per cent.).—Wooden sticks 1½ inches long, tipped with a mixture of iodine 60 per cent. and potassium iodide 40 per cent., packed in amber glass containers. Each stick is to be used but once.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Antiseptic Supply Co., New York.

IODOAPPLICATORS AND IODOAPPLICATORS, SPECIAL (Iodine 60 per cent. and Potassium Iodide 40 per cent.).—Wooden sticks 6½ and 12 inches long, respectively, tipped with a mixture of iodine 60 per cent. and potassium iodide 40 per cent., packed in amber glass tubes. Each stick is to be used but once.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Antiseptic Supply Co., New York.

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SATURDAY, DECEMBER 18, 1915

FATS IN METABOLISM

Our increasing information in respect to the phenomenon known as the specific dynamic action of the foodstuffs in metabolism has repeatedly been discussed in The Journal. If the basal level of metabolism, that is, the transformation of energy in an individual at complete rest and in the absence of food, is carefully determined by the methods of either direct or indirect calorimetry now successfully in use in this country, remarkably constant values are obtained from hour to hour. The fundamental resting energy requirement in each case is thus shown to be surprisingly uniform; and when suitable allowances are made for inequalities of size, the basal metabolism per unit of the individual appears likewise to be quite comparable between different persons. The scientific basis for estimating the minimal energy requirement of the healthy, normal individual is thus established.

Ingestion of food is the occasion for an increase in the metabolism. The cause of this "specific dynamic action" of the foodstuffs has been a subject for investigation and theorizing for many years. Repeated attempts have been made to explain, on some general underlying basis, the known phenomena of this increased heat production attending the intake of foods. Hypotheses postulating the increased work of the digestive glands and the alimentary apparatus, the circulatory and the excretory organs, entailed by food intake, have all been found inadequate to account for the known facts. Again, it has been suggested that the products of digestion act as stimulants to the body cells, and thus induce chemical changes with a liberation of heat. Attempts have even been made to designate these metabolic stimuli as being definitely of an acid character. Thus it was hoped to account for the heightened basal metabolism in certain diseases on the ground of an undue production of acid products as a result of the nutritive disorder.

It is becoming more and more apparent that the potent factor in increasing heat production in the ways just cited lies in increasing the metabolites available for cell nutrition. Added evidence of this has lately been furnished by Murlin and Lusk[1] of Cornell University Medical College. Carbohydrates like glucose, and the amino-acid digestion products of proteins are readily absorbed; and when they are consumed, a rise in heat production follows promptly. Fats differ from the other foodstuffs in that the progress of their absorption is somewhat slower. The fat content of the blood shows a gradual rise after ingestion of fats, and may not reach its maximum until several hours after the intake of the meal. Murlin and Lusk have found that the heat production of the organism shows a similar gradual rise after a meal of fat—an increase which may be regarded as parallel to the progressive influx of fat globules into the blood stream from the thoracic duct. They note that the ingestion of fat does not change the quantity of heat produced from protein and glycogen, but that the increased metabolism is at the expense of the fat ingested. It is evidently not a single factor or mechanism like the alimentary process which is here concerned. If glucose is ingested at the time of the highest fat metabolism, the heat production undergoes a second increase by the same quota which glucose alone would have increased metabolism. The respiratory quotient shows that glucose and fat were being oxidized together. Furthermore, when glucose and the amino-acid glycocoll, typical of a nitrogenous digestion product, are given together so that their molecules enter the circulation at the time of the height of fat absorption, the increase in metabolism is very nearly equal to the sum of the increases which each of the three materials would have induced alone. In the interesting details revealed by their work, Murlin and Lusk see a vindication of the opinion of that master student of nutrition, Carl Voit, that the height of the heat production is determined by the quantity and quality of the materials brought to the cells by the blood.

THE MADNESS OF SPORT

A dictionary defines sport as a "particular game or play pursued for diversion, especially an athletic or outdoor game or amusement." It then proceeds to give another definition of the word as "a mockery or object of derision." Any one who contemplates some of the performances in this country which have lately been dignified with the name of sport may wonder in which of the foregoing categories these exhibitions deserve to be classed. The public press has spread broadcast the story of a recent automobile contest in which the winner exceeded an average speed of 100 miles per hour for more than three hours. The reports of the finish tell that "the driver, overcome by the roar of his machine, was unable to hear for several minutes and acted otherwise like a deranged man."

1. Murlin, J. R., and Lusk, Graham: Animal Calorimetry, Twelfth Paper, The Influence of the Ingestion of Fat, Jour. Biol. Chem., 1915, xxii, 15.

This type of performance also reminds one of the dangerous and thrilling midair stunts in which a few widely advertised aeroplane enthusiasts have engaged, sometimes at the sacrifice of their own lives.

Some of this modern sport mania seems to us to deserve the condemnation which we have not hesitated to apply to certain features of the competitive athletics practiced in American institutions of learning or by other groups of young men.[1] No one will gainsay the value and pleasure of outdoor exercise graduated to suit the needs of every individual throughout life. But the species of overdoing called for in the intense competition of the great contests of our schools and colleges can no longer be defended by platitudes regarding the alleged psychologic value of its competitive features. The time has come when statistics regarding latent athletic injuries must be reckoned with and the lives of our youths safeguarded by making a distinction between sane sport and insane participation in the intolerable strain of competitive games of the extreme type. The desire to win at any cost must be criticized, not only from the standpoint of unethical practices between opponents, but also with consideration of the insults — sometimes almost intolerable insults — which the strain of training and final competition may place on even normal organs such as the heart. Dr. Willson of Philadelphia sounded a warning which will be endorsed by many an unbiased observer of what is occurring on our athletic fields, when he said: "Trainers should be taught just what the collapse of today means in the future of the athlete. Some day the college authorities must of necessity conclude that no form of athletic event is sane that demands of the participants the semiconscious state of heart exhaustion at its conclusion."[2]

Dr. Willson presents the issue squarely when he insists that the wisdom or unprofitableness of college and schoolboy competitive athletics must be determined by (1) the ultimate result of public competitive athletics on the physical health and lives of the participants, and (2) the possibility of determining the genuine physical integrity of the proposed participant or his lack of the same, especially with respect to his heart. These are criteria which the enthusiasts for the severest types of competitive sports must sooner or later face, unless they will maintain, like some of the advocates of war, that struggle develops some unique human virtues which overbalance any bodily harm.

The trainers of athletes are recruited from among individuals who have little or no appreciation of the physiologic principles involved in muscular performance. Their aim is comprised in the cry of "win at any cost," and their own prestige hinges on the success of their protégés in competitive or record-breaking contests. School and college authorities are singularly indifferent to the question of physiologic fitness and consequences in the case of students who are, in a sense, their wards. Any one who has given attention to the subject through unbiased channels can readily convince himself that little really useful information is ordinarily available among athletic associations and college groups regarding the physical condition of their members, except so far as it is exemplified in athletic performance. They need to be reminded in an emphatic and authoritative way, in the words of Willson, that "no form of athletic event is sane that demands of the participants the semiconscious state of heart exhaustion at its conclusion." Has not the time arrived to call a halt on "insane indulgence" in sport?

And what shall be said of the reckless forms of sport which seem to bewitch by the terrible dangers that they court? Little is gained for the progress of motoring or the science of flying by the daredevil types of performance which are a challenge to fate. They seem to have outdone the major sports in which at least any danger involved is not the chief interest to the spectator. Let us cease to dignify the recent exhibitions with the designation of sport. One editorial writer has expressed it by stating that events which depend for thrill on the nearest possible approach to death by the actors in them represent the degeneracy which overtakes sport and makes madness of it.

1. Athletic Sports in Relation to Health, editorial, THE JOURNAL A. M. A., March 21, 1914, p. 936; A "Danger Scale" for Athletics, March 28, 1914, p. 1024; Athletic Sports Versus Competitive Athletics, April 4, 1914, p. 1094; The Hygiene of Athletic Sports—Rowing, April 11, 1914, p. 1172; Collegiate Athletic Sports, June 20, 1914, p. 1967; High School Athletics, Nov. 14, 1914, p. 1765; A Foreign View of Competitive Athletics, March 13, 1915, p. 910.

2. Willson, R. N.: The Heart of the Athlete: Its Prospect and Protection, abstr., THE JOURNAL A. M. A., Oct. 9, 1915, p. 1304; Pennsylvania Med. Jour., November, 1915, p. 83.

GARMENT MAKING AND SOME DANGERS TO HEALTH

The solidarity in health matters that exists among all classes is made manifest by the results of an investigation of the garment making trades.[1] Attention to this phase of social betterment is more than merely philanthropic or charitable in the ordinary sense of the word; it also has a wide social significance. Improvements in the conditions under which such workers labor not only do good for those actually engaged in the occupations investigated, but also are of distinct benefit to the whole community in its definite limitation of the spread of disease.

Garment making has passed almost entirely out of the hands of the family and of the numerous small tailoring establishments which used to supply most of the demands in this line, to become the task of large concerns in which numbers of workers are necessarily employed often in very crowded quarters. The health of these workers, in addition to its importance as a matter of civic sanitation and the reduction of the municipal mortality and morbidity rates, is of special

1. Bull. 71, U. S. P. H. S.

significance from the fact that large numbers of the community are brought indirectly into contact with these workers through the garments which they have handled rather intimately in the making. The suggestion that tuberculosis is undoubtedly the most serious disease prevalent among the garment workers is rather startling. In the revolution of the trade, garment making has in recent years passed largely out of the hands of women into those of men, so that the observation that consumption is over three times as frequent among the males as among the females in the trade adds to the significance of this research.

The serious prevalence of pulmonary consumption in the trade may be gathered from the fact that the affection is nearly ten times as common among male garment workers as among soldiers in the federal army. The garment industries favor the prevalence of pulmonary tuberculosis (*a*) by intensifying bad postural habits; (*b*) possibly by reason of the presence of suspended matter, or what is spoken of as woolen "fly" in the trade, in the air of workshops, and (*c*) by reason of the lower state of metabolism induced by the inactivity of a sedentary occupation and insufficient nutrition consequent on low wages. For these reasons, garment makers are prone to tuberculosis, and are especially liable to affections of the respiratory tract. A much larger proportion of them than is found in the ordinary population suffer from emphysema of the lungs, chronic bronchitis, and chronic catarrhal conditions of the nasopharynx.

As most of these affections have at least some infectious element in them, the recommendations of the Public Health Service for the lessening of the dangers to the community from the garment working trades are worthy of wide consideration. They suggest that "fly" should be eliminated from the air of the workshops by suction cleaning, and the coating of the floors with some dust-retaining oil. Dry sweeping should be rigidly suppressed. If good habits are insisted on at the beginning of work at the trade, better postures are assumed, and the danger from lung compression by stooping is avoided. The general health would be much better preserved, and resistive vitality distinctly heightened, by the enforcement of regulations against promiscuous spitting, as well as against the use of the common drinking cup and the common towel. In recent years there has been a marked improvement in these matters, but much remains yet to be done, and numerous evasions of the regulations have been noticed in the shops. The high prevalence of tuberculosis among garment workers, and their direct relation to the public, make the absolute enforcement of such regulations imperative. Finally, the care of the mouth and the teeth represents an extremely important element in prophylaxis, and above all in the preservation of health, so that the investigators rightly insist rather emphatically on including these among their recommendations. Such matters seemed more of personal than of public interest only a few years ago, but now their relation to public health becomes very clear.

Recent years have brought so much amelioration of the working conditions among this class that there seems every reason to think that only a little more interest is needed now to remove most of the abuses that are responsible for the ill health of the workers. With the definite knowledge presented by this investigation, it would be quite possible to make this trade at least no more dangerous than a good many others, and to eliminate most of the risks which now exist of respiratory affections being spread beyond the workroom.

LESSONS FROM RECENT CHOLERA OUTBREAKS

The statistics and experiences derived from the cholera outbreak in Manila somewhat more than a year ago furnish a number of new considerations for the guidance of those entrusted with the problems of public health.[1] Two important features stand out clearly in the light of the successful control of the situation in the Philippines. One of these is the demonstration that in effectively combating a cholera invasion, the use of laboratory facilities in the making of bacteriologic diagnosis on a large scale is absolutely essential. Without such assistance as is available in the well-equipped Insular Bureau of Science, the results which have been accomplished would have been impossible. From November 1 to November 10 alone approximately 20,000 bacteriologic examinations were made, and before the work of inspection was completed, the number of examinations must have exceeded 100,000. The administration of such a service is, by itself, an affair of no small magnitude; and the task assumes an even more formidable aspect when one recalls that social and political difficulties often need to be overcome in order to make possible an inspection of persons who usually present no outward manifestations of ill health. Carriers must be detected regardless of the consequences. To avoid a danger one must know where it lurks.

Lieut.-Col. Munson, who was the adviser of the Bureau of Health, but who has now returned to this country, has remarked that the work at Manila meant invasion of the accepted rights of the home and of the individual on a scale perhaps unprecedented for any community. The collection of the fecal specimens might fairly be regarded as repulsive to modesty. Add to this, he continues, the facts that the search was made among persons, to themselves and others apparently healthy, who could scarcely fall even within the class of suspects, and that those found to be carriers

1. The information cited in this connection is derived from a paper read by Lieut.-Col. E. L. Munson of the United States Army at the annual meeting of the Philippine Islands Medical Association, Philippine Jour. Sc., Sec. B., Trop. Med., 1915, x, 1.

were subjected to all the inconveniences of isolation, separation from family, loss of earning capacity, etc., and it is apparent with what tact and caution the work had to be carried out and public opinion created in favor of it as an unpleasant but necessary measure.

The second lesson of the Manila outbreak of 1914 was the importance of the cholera carrier. In periods when the mortality is high, the proportion of persons who are carriers without presenting symptoms of the disease will be relatively small; but when the mortality is light, according to Munson the lack of virulence in the germ will probably permit it to be harbored in many cases without the production of symptoms, so that a considerable percentage of carriers may be expected. Outbreaks such as that of 1914 in Manila, accordingly, occur in which the carriers appear to have been not only the most numerous but also the most insidious and dangerous sources of infection. It was undoubtedly spread chiefly by personal contact. Public water supplies and articles of food—all of which were formerly charged with a major offense in the transmission of such diseases—were eliminated as channels of infection, and likewise the flies played an insignificant part at most in its spread. According to the experts in the field,[1] the lack of use of toilet paper, certain habits in the use of the toilet, infected fingers, and the habit of eating food with the hands from a common dish furnish opportunities for passing the infection from the carrier to another person.

A further lesson emphasized by the recent experiences is that the five-day period usually accepted for incubation and quarantine will not suffice in a very considerable number of instances. This, as Munson points out, sheds light on cholera situations not otherwise readily explained. An observed convict who died of true cholera after an eighteen-day period as a carrier "might have traveled half way around the world scattering his infection broadcast" and died of the disease in a place thousands of miles from any other source of infection. There is a warning in such cases, says Munson, that health officers all over the world would do well to heed.

An examination of many cholera patients and carriers by Schöbl[2] showed that vitality of cholera vibrios in the human body is not inconsiderable. In forty-three out of eighty patients, the stools were positive for from two to seven days; in twenty-two, from one to two weeks; in six, from two to three weeks; in one case, for forty-eight days. Treatment to free the intestine of the invading micro-organism seems to have been of little value. Trained experts are necessary to manage the serious situations that may be created. Munson's advice deserves to be emphasized: the prompt eradication of a general cholera infection includes the detection and isolation of carriers as a scientific prerequisite.

2. Schöbl, O.: Observations Concerning Cholera Carriers, Philippine Jour. Sc., Sec. B., Trop. Med., 1915, x, 11.

FOODS AND DRUGS IN SMALL PACKAGES

There has lately been considerable agitation over the subject of "package food." The questions involved in the sale of edible products in package form are in many ways similar in principle to those related to the distribution of common drugs and chemical preparations in special containers instead of the usual and older method of sale in bulk. There are products like canned goods among foods, or therapeutic serums among medicinal articles, which cannot be distributed satisfactorily in bulk because of inherent difficulties in their preparation and preservation. These substances must be kept sterile until used, and hence demand a special container. But aside from such obvious necessities, the problem of the relative advantages and disadvantages of package goods perhaps deserves to be carefully weighed in these days of increased cost of living. Some features of the arguments involved have recently been summarized by Street[1] of the Connecticut Agricultural Experiment Station. It is regarded as a favorable feature that the labeled small sealed package gives some assurance respecting the quality of the goods it contains, inasmuch as the manufacturer is usually eager to establish a reputation for them, and therefore finds it to his advantage to furnish a satisfactory product. This is doubtless correct in many cases, so that a particular brand of package goods comes to stand for some special merit. In certain instances, however, the real value or usefulness of the product is obscured by the advertising features of the special package. Attention is directed thereby to incidental properties of the contents, to some color, flavor or alleged quality which has nothing to do with food value, nutritive superiority or therapeutic merit. It is the package rather than the product which becomes the attraction to the purchaser, and almost invariably at a charge which must include extraneous costs not suspected by the purchaser. It is not unfair, therefore, to ask whether the same price expended on bulk goods by a discriminating purchaser would not, in many cases, secure better values.

It must be admitted that the sealed package usually makes for cleanliness and sanitary conditions, that it sometimes conserves flavors and other sorts of dietetic attractiveness, that it tends to "standardize" prices and protect the ignorant purchaser, and that it offers many conveniences for transportation and storage. We must nevertheless learn to count the cost of extraneous elegance and attractiveness. And when the needs of institutions rather than persons or families are taken into consideration, the disadvantages of many varieties of "loose" foods need to be seriously debated before the latter are condemned. "The consumer of limited income," says Street, "has no more economic right to buy crackers, for instance, in small packages than be

1. Street, J. P.: Foods That Are Marketed in Small Packages, Mod. Hosp., 1915, v, 168.

has to buy champagne, caviar, pâté de foies gras, or a hundred other similar luxuries." Here is a point of view which suggests the desirability of establishing greater skill in marketing among our people as a whole.

If we object to the purchase of familiar drugs like hexamethylenamin or acetanilid under fancy trade names in expensive form, how shall we defend the comparable practices in the food industries? The question becomes particularly acute in institutional management, where superfluous paper, pasteboard, glass and tin, along with a liberal allowance of printers' ink, can scarcely make good the deficit in real nutriment or medicinal potency. Manufacturers of superior brands are beginning to appreciate this, and are meeting the objections by supplying their particular products in larger containers at more economical prices, aiming merely to protect the reputation of their goods by a special label. There is a marked distinction between buying a particular brand of, say, boric acid or saccharin, under conditions which identify the maker, and purchasing expensive small packages of the same items with mystical designations.

The net weight or volume package laws are intended to give a welcomed and adequate opportunity to every purchaser to ascertain the true content of every package which he pays for. It will require considerable education in the reading of labels to make him appreciate that what appears like a half pound of attractively cartoned crackers is in reality only a fraction thereof, or that a large box of breakfast food is liberally filled with an inner container. In any event, all the newer requirements for the labeling of foods and drugs in a truthful manner represent steps in the direction of progress. The clearer the truth is brought out, the greater will be the advance in the practices concerned.

Current Comment

THE EFFECT OF PURIN FOODS ON THE URIC ACID CONTENT OF THE BLOOD

Until quite recently, one of the most helpful indexes of the result of any dietary regimen or therapeutic measure involving metabolism was obtained by an analysis of the urine. Thus, the tolerance for carbohydrates was ascertained by examination of the secretion from the kidneys for sugar after the ingestion of varying quantities of this type of foodstuff. The relative ability of the kidneys to excrete the usual tissue waste products and inorganic salts was likewise ascertained by urinary analysis, and the efficiency of the renal functions judged on this basis. The advent of suitable methods for the analysis of very small quantities of blood—the so-called micro-analysis—has transferred the seat of observation to the circulating fluid in the vascular system. Blood analysis for clinical purposes is making rapid strides, not only in the direction of qualitative tests, such as those for evidences of syphilitic and other infections, but also along quantitative lines. Several useful "clinical" methods for sugar estimation in blood have been published; and nonprotein nitrogen, urea, creatinin, uric acid, fats and lipoids have been brought within the scope of feasible determination on small samples of blood. Enough is already known to demonstrate the value of many of the facts thus ascertained for the clinic of kidney diseases. The ingestion of purins, either free as they occur in meats, or in the form of the nucleoproteins of glandular tissues like liver, sweetbread, etc., is followed by a decided increase in the urinary output of uric acid. Little has been known regarding the immediate effect of the absorption of purins on the uric acid content of the blood. Denis[1] has recently found, from studies at the Massachusetts General Hospital, that in normal individuals no increase in the circulating uric acid is produced by the ingestion of even large quantities of purins. It has further been found that the intake of ordinary protein may be increased from an amount sufficient to give from 6 to 8 gm. of urea in the twenty-four hour urine to that sufficient to produce a daily urea excretion of from 30 to 50 gm. without producing an increase of more than 2 or 3 per cent. in the circulating urea. As Denis points out, it would thus seem that the normal kidney reacts toward an excess of uric acid in a way essentially similar to that in which it conducts itself toward an excess of urea, and is able to excrete the excess of uric acid presented to it when a diet high in purins is fed, thereby keeping the circulating uric acid at the same level as that obtained when only endogenous uric acid is to be excreted. When damage to the kidney has occurred, and even before this has progressed to the point at which nitrogen retention is apparent, as shown by the nonprotein nitrogen values, an accumulation of uric acid takes place in the blood after a short period of purin feeding. This is interesting not alone from the evidence that it brings of the importance of the renal efficiency for the level at which uric acid circulates in the blood, but also in its relation to diagnostic procedures. Denis suggests that when the determination of uric acid in the blood is undertaken as a diagnostic test, the insistence on a preliminary period during which no purin-containing foods are consumed is unnecessary except in cases in which kidney insufficiency exists, or perhaps in the case of persons who habitually consume extremely large quantities of purin-containing foods.

HEMOGLOBINOPHILIC BACTERIA

Although bacteriologists have long been familiar with a rather large group of bacilli which grow artificially only in a medium containing hemoglobin, the peculiarities of these hemoglobinophilic micro-organisms are not so generally known by those who do not specially cultivate this field of study. The most conspicuous example of the group is the bacillus definitely recognized by Pfeiffer in 1892 as the etiologic factor in influenza. Its discoverer proved the hemoglobinophilic character to be a property of bacteria hitherto

1. Denis, W.: The Effect of Ingested Purins on the Uric Acid Content of the Blood, Jour. Biol. Chem., 1915, xxiii, 147.

unknown. The first cultures were made from pus derived from the bronchial secretions of influenza patients. It was the failure to secure subcultures on the usual nutrient mediums which directed attention to the part played by the accidentally introduced pus in the successful attempts and led to the observation of the unique rôle of the blood pigment in connection with these organisms. Davis[1] has recently called attention to the further interesting fact that certain of the hemoglobinophilic bacteria identical with or closely related to the influenza bacillus multiply more rapidly when grown on mediums in the presence of other bacteria, such as streptococci or staphylococci. Their virulence for animals is also increased. This means that they show to a marked degree the property of symbiosis. It is a well-known fact that influenzal infection may often aggravate other conditions, and severe mixed infections are not uncommon. The influenza bacillus, in particular, does not form spores, and is exceedingly sensitive to all sorts of bactericidal agencies. On culture mediums the bacilli die in a short time unless they are transplanted. Davis reminds us that the hemoglobinophilic bacteria are interesting in that they are pure parasites, for the very evident reason that only in animals can they find the hemoglobin, which so far as is at present known, is necessary for their existence. Inasmuch as they are delicate organisms, their length of life outside of the animal body is very short, not exceeding a few days at most. Davis also recalls that the exact rôle which hemoglobin plays in the metabolism of these microorganisms is not known. Inasmuch as extremely minute quantities of the blood pigment in mediums suffice for growth it is unlikely that the hemoglobin is necessary because of any purely nutritive properties.

1. Davis, D. J.: Hemoglobinophilic Bacteria, Science, 1915, xlii, 532.

THE PUBLIC LAUNDRY

If our industrial procedures and household practices remained unchanged from one generation to another, it might become far easier than it has been to control disease and stamp out familiar infections. No sooner, however, has one factor been controlled by some scheme of sanitation than changing custom has shifted the incidence of the supposedly eradicated danger and raised a new problem of health control. Thus, when laundry work was largely confined to the home, the possibility of infection was limited to a smaller group, and the opportunity for exposure to contagion easily appreciated and provided for. Today the handling of soiled clothes is being transferred more and more to special plants in which materials from many homes and still more individuals are brought together where employees come into contact with it. The possibility of infection under such conditions must vary for specific diseases, and depends on the probable readiness with which the micro-organisms concerned are transferred by soiled linen, and further on the efficiency of the laundry processes as a mode of sterilization. It is doubtless true that some of the more important disease germs are transmitted from individual to individual without any intermediate conveying device; nevertheless there are many infections, such as typhoid fever, venereal diseases, etc., which are known to be transmitted through fomites. So long as typhoid fever can be charged to the cook who has handled the food, it is not difficult to conceive of a similar transmission through the laundry worker. The high temperature, soap, washing soda and other chemicals to which clothes in the laundry are subjected in the washing process are responsible for a sterilizing action. Bacteriologic examinations have repeatedly demonstrated that it is effective. Dr. Dederer,[1] who represents the Committee on Occupational Diseases of the woman's department of the National Civic Federation, frankly states that there is no danger to public health from "mixed washing" of clothing with contaminated articles. It is pointed out, however, that while the washing process practically sterilizes the clothes, the reinfection of clean linen is possible when it is sorted and counted in the same room with soiled linen. Clean linen, when exposed to infection through contact with soiled linen, may disseminate infection. The upshot of this is that soiled linen ought not to be received, sorted or marked in rooms in which clean linen is kept. Eating and drinking should be prohibited in rooms in which soiled linen is manipulated, and laundry workers should be instructed concerning the latent hygienic dangers which they may encounter in their work. Sanitary measures involving personal hygiene are essential for their own welfare as well as that of the public served. The problems involved have never received any serious attention from public authorities in this country; but the rapid growth of the laundry business is certain to awaken interest in them, as it has been aroused in the case of public restaurants, bakeries, food shops and other institutions which are assuming household functions.

1. Dederer, Ebba A.: Danger to Laundry Workers of Infection from the Handling of Soiled Linen, Am. Jour. Pub. Health, 1915, v, 875.

THE NECESSITY FOR MORE INTENSIVE STUDY OF PRISONERS

Society itself is made a partner in crime by some of the methods aimed at the prevention of crime. That our present undiscriminating system of dealing with offenders against the law too often makes criminals is no news to those who have given it study; but reform is as yet sporadic and tentative. Two recent articles emphasize the need of study and classification of prisoners from the point of view of mentality and social adjustment. An abstract of one of these, an account of an examination by Drs. Ordahl and Singer of convicts at Joliet, appears elsewhere in this issue.[2] The other, Dr. E. R. Spaulding's elaborate study of 500 inmates of the Massachusetts Reformatory for Women,[3] was reviewed in the Current Medical Literature Department, October 23. In both of these, as in other similar studies, the large proportion of mental defectives found among the prisoners is striking. Evidently it is unjust to these subnormal persons to

2. An Examination of Prisoners at Joliet Penitentiary, Miscellany, THE JOURNAL A. M. A., this issue, p. 2189.

3. Spaulding, E. R.: Our Criminal Problem from the Standpoint of Classification and Segregation, Boston Med. and Surg. Jour., 1915, clxxiii, No. 15; abstr., THE JOURNAL A. M. A., Oct. 23, 1915, p. 1487.

punish them as if they were normal and responsible, and just as evidently it is a risk to society to release them at the end of their terms of imprisonment as if they were normal and responsible. Spaulding rightly urges the necessity of adequate provision by the state for permanent custodial care of all committable mental defectives, whether or not they have court records. Spaulding's article and that of Ordahl and Singer both emphasize the need of separating the more hopeful and educable class of prisoners from the class of confirmed and incorrigible criminals. Both articles also lay stress on the value—indeed, the necessity—of the indeterminate sentence. Although this phase of the matter is not discussed in either article, the data in both likewise suggest the reason for the undeserved odium which has in some instances been thrown on the workings of the indeterminate sentence and other excellent measures. The trouble with methods requiring discrimination and wisdom in their application is that they presuppose the possession of exact knowledge with regard to the prisoner; and this exact knowledge too often is not available, for the prisoner has not been sufficiently studied. Ordahl and Singer emphasize the "scanty and very unsatisfactory" character of the information on the subject of convicts available for the use of the board of pardons. Thus the dangerous criminal may be released to the detriment of society, and the pliable but not as yet dangerous accidental offender may be retained to his own detriment. Knowledge is needed; and with increased knowledge the more advanced methods will become feasible.

THE QUESTION OF BACILLEMIA IN TUBERCULOSIS

The pathologic condition now familiarly known as bacteremia, in which the micro-organisms of disease are not merely local in their distribution but are generalized by being carried about in the blood stream, is in any event a grave one. The capacity of bacteria to invade the circulation seems to be more common than was formerly believed to be the case. Thus the organisms of typhoid fever are now known to circulate freely in the blood during the first two weeks of the disease and often longer than this. Lobar pneumonia may be accompanied during its acute stages by a pneumococcus septicemia. Organisms like the streptococci and the anthrax bacilli give rise preeminently to the septicemic forms of infection. If they multiply rapidly in the blood, the situation immediately becomes serious. In other cases micro-organisms obtain temporary entrance into the blood current and either find lodgment in some tissue, as on the valves of the heart, or are destroyed by some immunizing agency and disappear from the circulation. An accurate knowledge of the customary deportment of each variety of micro-organism obviously affords an important basis for therapeutic or prophylactic procedures. The evidence regarding the presence of tubercle bacilli in the blood of tuberculous patients is exceedingly conflicting.[1] No one will deny that the micro-organisms occasionally enter the blood. The distribution of tuberculous lesions is of itself suggestive on this point. This, however, does not settle the question as to what extent and in what respect acute miliary tuberculosis is a generalized infection. Kessel[2] has lately made new attempts to grow tubercle bacilli directly from the blood, and to demonstrate their presence by direct microscopic examination and particularly by careful direct inoculation of susceptible animals with the blood from patients with advanced pulmonary tuberculosis — all with negative results. Kessel admits that this outcome in the forty-seven cases examined by him does not prove conclusively that tubercle bacilli are never present in the circulation; but they strongly suggest that a bacillemia such as is present in other infectious diseases is at least uncommon in pulmonary tuberculosis even in advanced stages of the disease. It may be that from time to time tubercle bacilli are washed into the circulation from a pulmonary focus; but it is shown by experimental evidence from the effect of direct intravenous inoculation that in such an event they rapidly disappear from the blood.

1. Berry, Jane L.: Tubercle Bacilli in the Blood, Jour. Infect. Dis., 1914, xiv, 162.

2. Kessel, L.: Concerning the Presence of Tubercle Bacilli in the Blood of Tuberculous Patients, Am. Jour. Med. Sc., 1915, cl, 377.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Smallpox at Alma.—It was reported from Alma, December 3, that thirty-two cases of smallpox have been diagnosed in the town.

Batavia in Quarantine.—The town of Batavia is practically quarantined because of a diphtheria epidemic. All churches and schools have been closed and all persons less than 19 years of age have been ordered to remain in their own homes whether they have the disease or not.

Medical Library Moved.—The medical department of LaSalle City Library has recently been moved to the Hygiene Institute, LaSalle, and is now known as the LaSalle-Peru Medical Library. The library has at present 703 bound volumes and about 100 unbound periodicals.

Quarantine Lifted.—All of Cook County with the exception of the Union Stock Yards and two infected areas in Lyons was ordered released from foot and mouth disease quarantine, December 10. In Lake County, Shields Township alone remains restricted; in McDowell County many townships remain free areas and all of Du Page County is declared free with the exception of the territory in Downers Grove Township within 3 miles radius of infected areas in Lyons township, Cook County.

Northern Central Physicians Elect.—At the forty-second annual meeting of the Northern Central Illinois Medical Association held in Peoria, December 8, Dr. James A. Marshall, Pontiac, was elected president; Dr. Frederick W. Wilcox, Minonk, first vice president; Dr. David S. Conley, Streator, second vice president, and Dr. George A. Dicus, Streator, was reelected secretary-treasurer. Two of the oldest medical men in the state, Drs. William O. Ensign, Rutland, and James Tweddale, Washburn, were present at the meeting.

Personal.—Dr. Victor A. Bles, a member of the staff of the Elgin State Hospital, is seriously ill as the result of a pulmonary hemorrhage. Dr. Bles has received notice of his appointment as clinical assistant in the department of neurology and psychiatry in the University of Illinois.——Dr. Frederick W. Werner has been elected chairman of the

active medical staff of the Silver Cross Hospital, Joliet. Dr. Grant Houston has been elected vice chairman of the staff and Dr. Roy B. Leach, secretary.——Dr. Harry H. Whitten has been appointed local surgeon for the Aurora, Elgin and Chicago Railroad at Batavia.——Elgin physicians held a banquet in honor of Dr. Harriett B. Ward, December 3.——Dr. Henry L. Metcalf, Mount Carroll, who has been critically ill with septicemia in the Freeport General Hospital, is reported to be improving.——Dr. Orie F. Schullian has been elected secretary of the Woodruff Memorial Sanatorium, Quincy.——Mrs. Bertha Logan, Chicago, has been elected superintendent of the Rockford Municipal Sanatorium.

Chicago

Leaves Large Estate.—The estate of Dr. Laura J. R. Wolcott, who died December 8, is appraised at $195,000.

Fresh Air Cars Taken Off.—The city council transportation committee, December 8, disapproved of the innovation of the so-called fresh air cars and no more of these cars will be operated, at least during the winter.

Red Cross Campaign.—The American Red Cross has inaugurated a campaign to secure 10,000 members in Chicago. At present the membership in the American Red Cross is 20,000 while the Japanese Red Cross has a membership of 2,000,000 and the German Red Cross of 1,000,000.

Personal.—Dr. Gottlieb A. Lurie, who has been on duty with the Rockefeller Commission in Serbia fighting typhus fever, has returned home.——Dr. Rollin T. Woodyatt of the Sprague Laboratory for Medical Research lectured December 8 in the amphitheater of the Cincinnati General Hospital on "Newer Aspects of Diabetes."

Health Commissioner Seeks to Extend Medical Inspection System.—Health Commissioner Robertson has asked for $250,000 to enable him to extend the health inspection service in the public schools. He believes that a physician and nurse should be on duty in each public school.

Heart Disease.—Figures compiled by the Chicago health department for the period from 1897 to 1914 show, in an interesting way, the actual and average percentage increase in deaths from heart disease in each ten and twenty year period from 20 to 80 years. Between 1897 and 1914 the deaths from heart disease for persons under 20 years increased 1 per cent.; from 20 to 30, 5 per cent.; from 30 to 40, 18.8 per cent.; from 40 to 50, 30.9 per cent.; from 50 to 60, 40.4 per cent.; from 60 to 80, 58.3 per cent.; over 80, 97.4 per cent., the averages of these percentages for all age periods being 49.4 per cent.

Charges Against Haiselden.—During the last three weeks, the newspapers have given considerable publicity to Dr. Harry J. Haiselden because of his action in the care of an infant born with anomalies of development. Formal charges were preferred against the physician before the Chicago Medical Society through which he holds Fellowship in the American Medical Association. The ethical relations committee before which the case came has submitted a report to the council of the society in which, according to newspaper report, the physician was found guilty of the charges and his expulsion from the society recommended. The committee is said to have based its recommendation: "Not on the fact that the Bollinger baby was allowed to die when the operation would have saved it, but because Dr. Haiselden permitted to be published over his name in a daily newspaper a serial story of the Bollinger baby's case, and because the same case, and his connection with it, have been exploited in moving picture shows." This report was received by the council and will come up for action in due course.

INDIANA

Free Dispensary for Evansville.—The mayor of Evansville, after conference with the committee representing the Vanderburg County Medical Society, stated that he would recommend the establishment of a free city dispensary in his next annual message.

Fort Wayne Physicians Elect.—At the annual meeting of the Fort Wayne Medical Society, December 7, Dr. Garrette Van Sweringen was elected president; Dr. Adam L. Schneider, vice president; Dr. Miles F. Porter, Jr., secretary, and Dr. Elmer E. Morgan, treasurer.

Rabies.—According to the report from the laboratory of the State Board of Health, for the year ended Sept. 30, 1915, there were 239 cases of rabies in the state, two of which were fatal. There have been 916 cases treated since treatment by the state was established. In 1912, 237 cases were treated.

Personal.—Dr. William W. Blair, Princeton, is reported to be critically ill.——Dr. Edgar W. Rine, Winchester, is reported to be critically ill with heart disease at his home.——Dr. T. Roy Cook, Bloomfield, is seriously ill with rheumatism and nephritis in the Linton Hospital.——Dr. Budd Van Sweringen, Fort Wayne, has been appointed chief surgeon of the Pennsylvania Lines west of Pittsburgh, to succeed the late Dr. Christian B. Stemen, Fort Wayne.——Dr. and Mrs. Emanuel P. Masgana, Linton, have returned to France, where Dr. Masgana will be connected with the French Red Cross.

KANSAS

Foot and Mouth Disease.—It is reported that a man at Ellsworth has contracted foot and mouth disease. The diagnosis, it is said, has been confirmed by the secretary of the State Board of Health.

Morris County Physicians Organize.—The Morris County Medical Society was organized at Council Grove, November 22. Dr. William A. McCullough, Delavan, was elected president; Dr. W. H. H. Smith, Alta Vista, vice president, and Dr. Albert Beam, Wilsey, secretary-treasurer.

New Building for University.—The dispensary and laboratory building for the University of Kansas at Rosedale was opened, November 22. The building is 46 by 86, with fireproof construction, two stories and basement in height and contains drug rooms, laboratories, examining rooms and general clinic rooms.

Personal.—Dr. Walter S. Sutton, Kansas City, has returned from service with the American Ambulance in Paris.——Dr. Charles E. Ross has been reappointed and Dr. Lloyd P. Warren appointed a member of the City Medical Advisory Board of Wichita.——Dr. Philip B. Matz, Leavenworth, has succeeded Dr. James T. Faulkner, Lansing, as physician at the Kansas State Prison.

Schools Closed by Disease.—The public schools of Troy have been closed as a precautionary measure against scarlet fever, and church services have been suspended for two weeks.——The county superintendent of Sedgwick County has ordered two schools in Districts No. 8 and 12 to be closed on account of diphtheria, and a third school has been temporarily suspended because of smallpox among its pupils.——The schools of Little River have been closed and all public gatherings have been interdicted on account of the presence of scarlet fever and diphtheria.——Two of the schools of Pratt have been closed for a week on account of the presence of diphtheria.

LOUISIANA

Decision Under Fraudulent Advertising Act.—Dr. Oscar Dowling, New Orleans, executive officer of the Louisiana State Board of Health, writes that on December 11 an important decision in favor of the board was rendered by Judge Ott under the Louisiana Fraudulent Advertising Act. Two weeks before, the board had preferred charges against C. J. Allen and W. M. Chapman, who were advertising "Herbs of Life," manufactured by the Herbs of Life Medicine Company, Springfield, Ill., and F. D. Haaze, who was exploiting the merits of "Shaker Tonic," "Shaker Oil" and "Shaker Balm Soap" manufactured by the Life Tone Medical Association of Memphis, Tenn. The first two pleaded guilty and were fined $100 and costs, the fine being remitted on their agreement to leave the state for good. The third defendant was tried December 11. He was found guilty and fined $325. He says the case will be appealed to the supreme court on the ground of unconstitutionality of the law.

MARYLAND

School Closed by Diphtheria.—The Williamsburg School has been closed for the second time this term on account of the appearance of several new cases of diphtheria.

Tuberculosis Week.—The past week was devoted to a warfare on tuberculosis in Baltimore, to impress on the people of the city the importance of taking an active part in the campaign against the disease. Each day was set aside for some particular educational demonstration, showing the ravages made by the disease. The program was confined to three days.

Chinese Physicians' Visit.—Two women physicians from China arrived in Baltimore recently and visited the Johns Hopkins Hospital, where they will study the work done by the

institution and the lines on which it is managed. They are Dr. Adela E. Sheffer and Dr. Wynao S. Wango of Shanghai, China, who came to this country with seven other physicians to make a study of the hospitals in America.

Medical Survey.—The first medical survey to be started in Maryland was inaugurated in Frederick County, November 29, with an inspection of the Johnsville School. The survey is being made by Surgs. Talliaferro, George L. Collins and Ed H. Mullan of the United States Public Health Service, and Drs. Richard B. Norment and Joseph Brown of the State Board of Health.

Gift to the Johns Hopkins.—A valuable collection of periodicals, monographs, and other medical books, consisting of more than 4,000 volumes, was presented to the Johns Hopkins Hospital by Dr. Howard A. Kelly, Baltimore. The collection can be said to be the life study of Dr. Kelly for most of the books deal with his own special work in gynecology and obstetrics and are valued at about $25,000. It is planned in the near future to have a suitable building erected for the library.

Personal.—Dr. William H. Welch, professor of pathology of the Johns Hopkins Medical School, who has been in China during the summer with Dr. Simon Flexner of the Rockefeller Institute, devising a way to introduce modern medical methods in the empire, will sail December 18 from Yokohama, Japan, for this country. On the return of Dr. Welch to Baltimore, the General Education Board will hold a meeting to discuss the addition of a new department to the Johns Hopkins Medical School and Hospital.——Dr. Marshall B. West, health officer of Catonsville, who was operated on several weeks ago at the Maryland University Hospital for appendicitis, has returned to his home and is improving rapidly.——Dr. Charles F. Nolen, Baltimore, who was recently operated on at the Union Protestant Infirmary, has recovered and resumed practice.

NEVADA

Correction.—Dr. Martin A. Robison advises under date of December 7 that the item in THE JOURNAL of December 4, stating that he and Dr. Henry Bergstein had resigned from the Reno Board of Health is not authentic; that both these gentlemen are serving on the board and have been serving since their appointment.

NEW YORK

Half a Million More Needed.—The creation of a division for the prevention of tuberculosis in connection with the State Health Department, the expense of laboratory work and the payment of the full salary of $3,000 a year to sanitary engineers are the three principal reasons for the increase in the appropriation in health work sought by State Commissioner of Health Biggs.

New Officers.—At the annual meeting of the Queens-Nassau Medical Society held in Long Island City, November 30, Dr. Edward H. Pershing, Woodmere, was elected president; Dr. John J. Kindred, Long Island City, vice president; and Dr. James S. Cooley, Mineola, was reelected secretary-treasurer of the society for the twenty-seventh consecutive term.

New York Physicians to be Prosecuted.—The New York *Sun* of December 10 announces in a telegram from Albany that prosecution of 300 physicians for violation of the vital statistics law has been ordered by the State Department of Health. The offense in every case was the violation of the section requiring the registration of births within five days. Dr. Cressy L. Wilbur, director of the division of vital statistics, states that physicians will be given an opportunity to explain the delay, but that only substantial reasons will be allowed as excuse for violation of the law.

Sanatorium Notes.—A proposition for the construction of a tuberculosis hospital, to take the place of the institution recently burned at Elmira, has been taken up with the Elmira Tuberculosis Hospital Sanatorium Commission. The plan is to make a bond issue of $2,000 in every budget when the 1915 budget has been adopted and to continue this same amount in the budget each year until the $12,000 deemed necessary for the erection of the hospital has been paid.—— A special committee has been appointed by the board of supervisors to serve for a month in an advisory capacity regarding the Steuben County Tuberculosis Hospital for which an appropriation of $30,000 was authorized at the recent election.

New York City

Neurologists Elect.—At the annual meeting of the Brooklyn Neurological Society, Dr. Siegfried Block was elected president; Dr. Charles P. Frischbier, vice president; and Dr. John F. W. Meagher, secretary-treasurer, and Dr. James F. Morrison, librarian.

Measles Among Belgian Refugees.—Three hundred Belgian refugees were landed here on December 8 and taken to Ellis Island for examination. Forty of the children were found suffering from measles and with their mothers were detained at the hospital on Ellis Island. All but 110 of the number have been held for further observation.

Personal.—Dr. George A. Wyeth was the delegate of the Bronx Board of Trade to the Rivers and Harbors Convention held in Washington, D. C., December 8.——Dr. Joseph J. O'Connell, health officer of the port of New York, Brooklyn, is reported to be seriously ill with heart disease at his official home, Quarantine Station, Staten Island.

Course of Instruction for Food Inspectors.—A course of lectures, conferences and demonstrations dealing with the various aspects of pure food work has been arranged by Mr. Lucius P. Brown, director of the health department's bureau of foods and drugs. The lectures are in the nature of a postgraduate course and are planned so as to perfect inspectors in the details of the various branches of their work.

Tuberculosis in New York.—A statemen: issued by the department of health in connection with the work of tuberculosis week places the number of persons afflicted with tuberculosis in this city at 50,000. Of the 37,000 known to the board of health only 3,200 are registered under the care of private physicians and 6,000 under the care of city institutions. It is estimated that 15,000 are treated at clinics.

Intern Examination.—A joint examining board will hold a competitive examination of candidates for internship in the New York, Roosevelt, St. Luke's and Knickerbocker hospitals on a day not yet selected. Application blanks and full information may be obtained from Dr. Charles L. Gibson, chairman of the Joint Hospital Examining Board, care New York Hospital, 8 West Sixteenth Street, New York City. Applications properly filled out must be in the hands of the committee on or before December 31.

Woman's Hospital Opens New Wing.—The Thompson Pathological Building which forms the west wing of the Woman's Hospital was formally opened on December 9 as a feature of the sixtieth anniversary of the hospital. This structure was erected at a cost of $150,000 and is the gift of Mrs. Frederick F. Thompson. An address was delivered by Dr. Henry Clarke Coe and Dr. Wilfred T. Grenfell of Labrador was one of the speakers. During the past year 2,500 patients have been treated in the hospital and 3,728 operations have been performed.

College of Physicians and Surgeons Formally Named.—The name "College of Physicians and Surgeons of Columbia University" has been adopted officially and the school formally declared to be the medical department of the university. It has been considered such for years but this formality has never been gone through. At this same meeting of the trustees the committee on conference was authorized to continue negotiations with the Presbyterian Hospital and to cooperate with other hospitals and institutions with the ultimate purpose of establishing a great medical center on the lines already planned.

Medical Society Topics.—Dr. Arthur B. Duel delivered an address before the New York Academy of Medicine, December 16, on "Orientation and Equilibration, A Study in the Sense of Position and Movement, Its Dependence on the Vestibular Apparatus and Its Importance in the Whole Field of Medicine."——The fourth lecture of the Harvey Society series given at the Academy of Medicine, December 18, by Prof. Florence W. Sabin of Johns Hopkins University, is on the subject "The Method of Growth of the Lymphatic System."——The first meeting of the New York Geriatric Society, which was organized in June last, was held December 15, at which the subject for discussion was "The Neglect of the Aged."

Surgical and Medical Clinics in New York City.—The Society for the Advancement of Clinical Study announces a continuation of its bureau of information relative to surgical and medical clinics to be held in New York City. A bulletin board is maintained for this purpose at the Academy of Medicine, 17 West Forty-Third Street, in charge of a competent attendant who is on duty from 9 to 12 a. m. and from 2 to 6 p. m. The clinics are posted on a special circular of

information which is mailed to outsiders at a cost of 50 cents per week. The bulletin board contains the daily clinics as well as those stated at various hours at different hospitals. Facilities are thus afforded to visiting physicians to observe special operators or clinicians.

Another Building for Mount Sinai Hospital.—Plans have been prepared for a new building for the mount Sinai group. This is to be known as the Guggenheim Memorial, and the entire expense of its construction will be defrayed by the six Guggenheim brothers. The estimated cost of the new building is $500,000. It will follow the design of the general construction of the main building fronting on Fifth Avenue and will be a complete hospital in itself. It will also have a separate staff of doctors. In addition to this gift, Mount Sinai Hospital has received $50,000 from Murry Guggenheim and $5,000 from each of his brothers to carry on the work of completing and equipping the five other buildings now in the course of construction.

Queensborough Hospital for Contagious Diseases.—Hitherto cases of contagious diseases occurring in the Borough of Queens and requiring hospital care have been taken to Kingston Avenue Hospital in the Borough of Brooklyn, but it is now announced that the new Queensborough Hospital will be complete and ready to receive patients on Jan. 1, 1916. The hospital is located on a farm between Jamaica and Bayside. It is of mission type, three stories high and thoroughly equipped for the purposes for which it is to serve. The wards are divided into cubicles so that there will not be more than two beds in each cubicle, thus insuring almost perfect isolation. The hospital contains 20,879 square feet of floor space and 243,800 cubic feet of room and is so designed that a large number of cases can be cared for at a small expense.

"Patent Medicine" Interests Would Defend Themselves.—A report of the recent meeting of the New York Pharmaceutical Conference as published in the *N. A. R. D. Journal* mentions "an offer from an unnamed source of legal and financial aid for druggists of this city who are prosecuted by the health department authorities for alleged violations of this ordinance. . . ." The proposal for accepting this aid was placed before the representatives of the conference by Dr. William C. Anderson, the chairman of that body, who refused to make public the name or names of those from whom the offer came. The Pharmaceutical Society as a whole passed resolutions, which have been quite widely published, signifying their intention of upholding and cooperating with the regulations of the department of health with reference to "patent medicines."

Whooping Cough Clinic.—The November *Bulletin of the New York City Department of Health* gives a full report of the first year's work of the whooping cough clinic which it has been conducting. The total number of cases treated at this clinic during its first year was 1,397. It was intended at first to treat only patients in the clinic district but it became necessary to let down the barriers in face of the numbers clamoring for treatment. The method of treatment followed consists in giving three to four subcutaneous injections of vaccines, one every other day, after which for a period of three or four days, a mixture of antipyrin and cod-liver oil is used for a period of three or four days. The whooping cough usually disappears after the third or fourth injection. Those familiar with the work of this clinic find that it fills a long felt want irrespective of the therapeutics employed, and that at least two more such clinics should be established, one in the Bronx and one in East New York.

Use of Diphtheria Antitoxin.—For many years the department of health has been furnishing diphtheria antitoxin free of charge to the public, and a corps of physicians was maintained to inject the antitoxin on request. Two years ago the administration by the department's physicians was discontinued, but additional facilities were provided for the prompt and ready use of this remedy by private physicians. The statistics of the health department show that there was more antitoxin sold in 1914 than in 1913, but that there was a very material reduction in the amount distributed free in 1914, with a very appreciable increase in the number of cases of diphtheria reported. This falling off in the use of free antitoxin was chiefly confined to Manhattan and Brooklyn with an increase in the number of cases of diphtheria in both boroughs, and in a measure accounts for the increased incidence. The department of health calls attention to the great significance of these facts and emphasizes the importance of the universal use of antitoxin in diphtheria.

NORTH CAROLINA

Communicable Diseases.—An epidemic of scarlet fever in Marion has rendered it necessary to close the public schools, to suspend the Sunday schools and to warn children to stay off the streets and avoid public gatherings.

State School Celebrates Anniversary.—On November 4, the seventieth anniversary exercises of the State School for the Blind, Raleigh, were celebrated. Governor Craig presided, and addresses were made by Superintendent John F. Bledsoe of the Maryland School for the Blind, and others.

Memorial to Living Physician.—The people of Currituck County have raised a fund in honor of Dr. William T. Griggs of Poplar Branch. Of this fund, $150 has been used to purchase an operating table in the Elizabeth City Hospital, and the remainder has been given to the charity fund of the institution.

Hospital Notes.—The Hendersonville Hospital Association recently elected Dr. William R. Kirk chief of staff and Drs. William B. W. Howe, Jr., James S. Brown, Guy E. Dixon, Benjamin F. Cliff, Andrew B. Drafts, James F. Cranford and Eugene P. Mallett as associates. Dr. James F. Cranford was elected dean of the training school.

City to be Sued.—The State Board of Health has authorized that action be instituted in the courts to compel the city of Louisburg to install a sewage purification plant, as ordered by the State Board of Health some time ago. At present the sewage of Louisburg is discharged into a stream which later supplies other towns in the state with water, and these towns have been compelled to install purification plants to care for their town and to care for other towns still farther down the river.

Personal.—Dr. Harry Q. Alexander, Matthews, Mecklenburg County, was recently elected president of the North Carolina State Farmers' Union for the ninth successive term, and Dr. James M. Templeton, Cary, was elected vice president. ——Dr. William W. Stancell, assistant physician to the State Hospital for the Insane, Raleigh, is taking postgraduate work in New York, and will move to Montana next year.—— Dr. and Mrs. James L. Egerton, Hendersonville, have returned after a six weeks' trip to the Pacific Coast.——Dr. John H. Mease, Canton, who has been under treatment in a hospital in Baltimore, has returned and resumed practice.—— Dr. Hubert B. Haywood, Jr., Raleigh, has been elected physician to the New York State Agricultural and Mechanical College, as the result of a competitive examination.

Medical Society News.—The entire membership of the Buncombe County Medical Society was entertained at dinner by Dr. Eugene B. Glenn, the president, at his home in Asheville, December 6.——The Lincoln and Catawba medical societies held a joint session at Lincolnton, December 6, and were entertained at dinner by the physicians of Lincolnton. ——The Pasquetank-Camden-Dare County Medical Society held its annual meeting and election in Elizabeth City, December 1, and elected the following officers: president, Dr. Wm. A. Hoggard, Woodville; vice president, Dr. John B. Griggs, Elizabeth City; and secretary-treasurer, Dr. William A. Peters, Elizabeth City.——The New Hanover County Medical Society has enlarged its scope and now allows public health workers, dentists and pharmacists to become associate members.

PENNSYLVANIA

Personal.—Dr. Harry B. Rushton has been appointed meat and milk inspector of Reading.——Dr. Nelson E. Newbury, Scranton, was assaulted by the half-crazed son of a patient, and severely beaten.

Medical Club Election.—At the annual meeting of the Oil City Medical Club, December 2, Dr. Harry H. Lamb was elected president; Dr. Irwin H. Boyd, vice president; and Dr. Sylvester W. Sellow, secretary-treasurer.

Improvement to Hospital.—Grand View Hospital, Sellersville, plans enlargements, at its present location, between Sellersville, Menlo Park and Perkasie. Messrs. C. N. and B. F. Cressmann of Philadelphia are to be its almoners.

State Exhibit to Panama.—Governor Brumbaugh has authorized the loan of the State Department of Health social hygiene exhibit at the Panama-Pacific Exposition to the United States government for exhibition at the Panama National Exposition.

Guests of Honor.—Dr. Barton K. Thomas, Philadelphia, was the guest of honor at a dinner given to the physicians of Pottstown by Dr. T. Edmund Mills, December 1.——Dr. William L. Rodman, President of the American Medical

Association, was the guest of honor at a dinner given by Dr. John B. McAllister at the Harrisburg Club, December 3, and afterward delivered an address at the twentieth anniversary meeting of the Harrisburg Academy of Medicine.

Schools Closed on Account of Disease.—The borough schools of Robisonia have been closed on account of the presence of diphtheria.——The public schools and Sunday schools at Orwigsburg have been closed and children under 16 have been prohibited from attending public gatherings, moving picture shows, etc., on account of a measles epidemic. At present seventy-three cases have been reported.——Jessup and Marshwood have ordered all schools closed and have prohibited all religious and public meetings for the time being on account of the prevalence of smallpox.

Typhoid Infection Traced.—State Health Board officials, directed by Dr. Samuel Dixon, have been cooperating with the authorities of Abington Township in an effort to trace a number of cases of typhoid fever which have broken out in Abington and Moreland townships, north of Philadelphia. According to Dr. Dixon there are twenty-two cases and at the time of the first outbreak of typhoid some time ago, it was determined that the cases were distributed along routes served with milk from one dairy. Tests were made, not only of milk, but of the water supply, and of oysters, celery, and other raw vegetables. The department found everything blameless excepting the milk. Improvements have been made at the dairy in question, and a repetition of the outbreak is not at all probable.

Philadelphia

Health Bulletins.—Big posters, in red ink, to teach mothers how to buy food that will keep their children in good health, will be distributed in a few days by the Child Federation. The poster is the fifth bulletin issued by the federation.

Rescue Drug Addicts.—Drs. Horatio C. Wood, Jr., and John W. Ryan, members of a commission of physicians and business men of Philadelphia, recently formed for the purpose of aiding the habitual users of drugs, sent eleven drug addicts to hospitals, December 3. The expenses for the treatment are paid from a fund raised by the committee from contributions by business and professional men of the city.

Inspection of House of Correction.—The consulting board recently named by Director of Public Safety Dripps for the aid of persons in the house of correction is composed of Drs. James W. Anders, Ella B. Everett, J. Leslie David, Charles H. Frazier, Elijah H. Siter, Thomas H. Fenton, T. H. Weisenburg, Horace Philips and Frank Crozier Knowles. The committee began its work December 15, with a thorough inspection of the Holmesburg institution.

Testimonial Dinners.—The members of the Samaritan Hospital Medical Society gave a testimonial dinner, December 16, to Dr. George Morton Illman at the Mercantile Club, December 16.——Prof. Jacques Loeb delivered an address on "Adaptation" at the meeting of the Philadelphia County Medical Society, December 8, followed by a reception and supper. The meeting was arranged by the committee of the medical society on cooperating allied agencies and institutions.

Fatality Record.—Despite safety-first campaigns to reduce motor-car accidents, statistics compiled by the coroner show that the year drawing to a close will reach the high-water mark in deaths of this kind. Seventy-one persons have met death to date in motor accidents, an increase of fourteen over 1914. However, deaths from trolley accidents have shown a marked decrease, forty-three persons having been killed so far, against fifty-seven last year. This number is the smallest since 1906. Railroad deaths total to date about seventy-one, against the same number in 1914.

Personal.—Dr. Malcolm Grow has been appointed chief surgeon to the twenty-first flying column of the Russian Red Cross.——Dr. Charles B. Penrose has been appointed a member of the Fairmount Park Commission.——Dr. Wilmer Krusen is said to have been selected by the mayor-elect as director of health and charities.——Dr. C. F. Mitchell sailed for France, December 4, where he will serve on the staff of the American Ambulance Hospital.——Dr. Daniel J. McCarthy, member of the University of Pennsylvania unit at the American Ambulance Hospital, Paris, has returned from abroad.

Tuberculosis Week.—The observance of "Tuberculosis Week," which began December 6, was given a flying start in this city. A campaign of publicity to arouse this country for a fight against this deadly disease was the object of the crusade. At the local headquarters of the National Association for the Study and Prevention of Tuberculosis, 1701 Chestnut Street, hundreds of pamphlets showing the effect of tuberculosis on the human body were distributed. Statistics showing the relative growth of the disease in the various states were also displayed. This year's program includes a "medical examination day," which took place December 8, when the need for a physical examination for every one was urged.

Charities Bureau.—Having installed all machinery necessary for undertaking relief work among charitable institutions of the city, the Charities Bureau of the Chamber of Commerce have turned the first wheel in their campaign to supplant indiscriminate giving with scientific methods, the purpose of which is to give 90 cents out of every dollar directly to the cause or persons involved. The bureau planned to begin a thorough investigation of all hospitals and institutions doing charitable work. The list will cover virtually every hospital in the city. In spite of the fact that a number of them are supported through state aid, almost without exception, it was said at the Chamber of Commerce they receive private help, too. The examination by the Charities Bureau will take in the organization of these institutions, the administrative methods, the officers and directors. Finances will be scrutinized to find out whether the best results are being gained. This work will be done through personal visits and the findings placed before the committee, who will pass on the standard of work done and the degree of efficiency shown. Members of the Chamber of Commerce will be posted as to what the hospitals are doing in charitable work and a complete list of worthy institutions will be made in order to prevent solicitors of unworthy causes gaining a hearing.

WISCONSIN

Mix in Oshkosh.—Dr. Charles L. Mix, Chicago, was the guest of honor and delivered the address at a banquet and joint meeting of the Winnebago County Medical Society and Oshkosh Medical Club, November 24.

More Sterilisations Planned.—Operations on fifteen additional patients under the sterilization law will be made before Christmas holidays. According to a statement of the officials of the State Board of Control, the first ten operations are said to have been entirely successful.

Communicable Diseases.—On November 29 it was reported that there were twenty-five cases of smallpox at Plymouth. ——An epidemic of diphtheria has been reported to be in Block Brook, and on the advice of the deputy state health officer, District School No. 4 has been closed. Seventeen of the pupils of this school were either ill or there was diphtheria in their families.——Antigo reports the presence of thirty-seven cases of smallpox.

Sanatorium Notes.—A petition has been presented to the Waukesha County Board setting forth the need of a tuberculosis sanatorium and asking for an appropriation for its erection and maintenance.——The city council of Milwaukee has voted to rebuild the Blue Mound Sanatorium for the treatment of incipient tuberculosis, Wauwatosa. The new institution will accommodate not less than 150 patients. Health Commissioner Ruhland also recommends enlarged dispensary service for early diagnosis of the disease.—— Grant County has voted against the establishment of a tuberculosis sanatorium by a vote of thirty to twenty-three.

State Sanatorium Controversy.—Dr. Norman F. Hoffman, superintendent of the State Sanatorium, Wales, whose resignation has been demanded, appeared before the Wisconsin Board of Control at Madison, November 30, and stated that the charges of incompetency against him were unfounded. A committee of six Milwaukee physicians who made an investigation of the institution, November 26, reports no dissatisfaction of the management on the part of the patients or employees, that the records of the sanatorium show very favorable results so far as the treatment of patients is concerned, and that the expenses of conducting the institution have been reduced.

Rules Against Physician.—The attorney general on November 27 advised the district attorney at Antigo that a physician who attends a dependent sick person cannot lawfully charge the town, village or city in which the sick person resides for such service without the consent of the municipality. The case in point was that of two physicians who attended a sick woman in Langlade County. They performed an operation to save her life and the patient's condition was so urgent that the physicians did not have time to consult the town authorities. The town refused to pay the bill and the physicians threatened to bring suit to collect, but the attor-

ney general rules that under the circumstances the plaintiffs have no lawful claim against the town or county.

Hospital News.—The new hospital building of the Milwaukee Infants' Home and Hospital is nearing completion. The building is fireproof, two stories and basement in height and will accommodate about fifty patients. This will more than double the capacity of the institution.——A hospital has been opened in Bloomer, which will be open to all local physicians.——A new Lutheran Hospital is to be erected at Plymouth to cost $40,000. Of this amount, subscriptions of $10,000 have already been received.——The county board of Waukesha County has recommended the erection and maintenance of an isolation hospital on the county farm grounds north of Waukesha.——Steps have been taken for the formation of a corporation to build a Lutheran Hospital in Superior.

Personal.—Dr. Moses J. White, who has been superintendent of the Milwaukee County Hospital for the Insane, Wauwatosa, for twenty-two years, has been succeeded by Dr. Albert F. Young, Milwaukee.——Dr. Frank J. Schultz, Milwaukee, has been reelected superintendent of the Milwaukee County Hospital.——Dr. William F. Beutler has been reelected superintendent of the Milwaukee County Asylum for the Chronic Insane, Wauwatosa.——Dr. John T. Corr, Racine, has been elected physician for the blind in the eastern district of Racine County, and Dr. William A. Fulton, Burlington, to fill a similar position in the western district.——Dr. Arthur J. Patek, Milwaukee, was operated on for appendicitis in Mt. Sinai Hospital, Milwaukee, November 12, and is doing well.——Dr. Clyde W. Morter, Milwaukee, is suffering from septicemia and is under treatment in Mt. Sinai Hospital.

CANADA

Laval's Offer Accepted.—A cable has been received from the war office by the Canadian minister of militia accepting the offer of a hospital from Laval University, Montreal. It will be established in England as a general military hospital.

Queen's University to Get Legacy.—The executors of the estate of the late Lord Strathcona have notified Queen's University, Kingston, that the $100,000 left to that university is now available and ready to be paid over to the beneficiaries.

Personal.—Dr. John M. Adams, formerly of Seattle, has arrived at Shornecliffe, Kent, to take up his duties wtih the Canadian Army Medical Corps attached to the Forty-Third Winnipeg Regiment, of which Sir William Osler's brother is lieutenant-colonel, and Ralph Conner, the author, is chaplain.——Col. George G. Nasmith, R.A.M.C., Toronto, who has been in charge of the Canadian Field Expedition since the outbreak of the war, has returned for a short rest and then, it is said, will recruit a large medical contingent to return with him to the war zone.

Outdoor Expansion at the Toronto General Hospital.—The board of governors of the Toronto General Hospital, acting on the advice of the superintendent, Dr. Charles K. Clarke, are establishing two new free clinics. The first will be for the treatment of contact cases of tuberculosis; this may be opened nightly. The second will be for social diseases. The third will be for occupational diseases, as now that much ammunition is being made in Toronto, there have been increased cases of lead poisoning and other occupational diseases. It is expected the establishment of the first two will deal a blow to quack doctors and worthless medicines.

Toronto University Hospital Kept Moving.—It is understood that the University of Toronto Base Hospital is now located in Macedonia, although some fear is entertained for the rather dangerous position of this hospital. Several cables from Toronto to the officer commanding recently have remained unanswered; and the latest word is from a letter from Dr. William J. O. Malloch. Writing from Saloniki, Dr. Malloch states that it is no wonder residents of Macedonia once called for the apostle St. Paul. They really needed the whole twelve. For a time the unit was divided, some going with some 500 wounded to Malta, but it is understood that the unit has again been reunited.

GENERAL

Correction.—In Table 1, p. 2142, this issue, the minus-plus sign should be a minus, and in all the tables in the article the minus sign indicates "no trypanosomes."

Porto Rico Physicians Meet.—The annual meeting of the Medical Association of Porto Rico was held in the Young Men's Christian Association rooms, San Juan, P. R., December 11 and 12, under the presidency of Dr. Pedro Gutierrez Igarravidez.

Biologists to Meet.—The Federation of American Societies for Experimental Biology, formed by the Physiological Society, The Society of Biological Chemists, The Pharmacological Society and The Society for Experimental Pathology, will hold its annual sessions in Boston at the Harvard Medical School, December 27 to 29, inclusive.

Salvarsan to be Generally Available at Usual Price.—We understand that the French and British governments have acceded to the request of the United States government and will allow a six months' supply of salvarsan and neosalvarsan, covering the requirements of the United States, to be shipped from Rotterdam. The British consul general at that port has been instructed to issue permits on application for such quantities. Farbwerke-Hoechst Co., the American agents, announce that as soon as shipments arrive they will be released to physicians and hospitals as heretofore, and that there will be no increase in price. It is also announced that the patentees are arranging to manufacture the products in this country, but it will take some months before a successful product can be turned out here.

Pan-American Scientific Congress.—The second Pan-American Scientific Congress will be held in Washington, D. C., Dec. 27, 1915, to Jan. 8, 1916. The congress interests educators, scientists and publicists and its work will be done in nine sections, namely, anthropology, astronomy, meteorology and seismology; conservation of natural resources; agriculture, irrigation and forestry; education; engineering; international law, public law and jurisprudence; mining and metallurgy; economic geology and applied chemistry; public health and medical science, and transportation, commerce, finance and taxation. There will also be forty-five subsections. The section on public health and medical science will be presided over by Maj. Gen. William C. Gorgas, Surgeon-General, U. S. Army. The organization headquarters will be the Pan-American Union and the headquarters during the congress will be the New Willard Hotel.

Arsenobenzol (Salvarsan) Made in This Country.—From a communication received from Dr. Jay F. Schamberg, director of the Department of Dermatological Research, we abstract the following:

The dermatological laboratories of the Philadelphia Polyclinic have been engaged for over three years in certain scientific investigations related to dermatology. Over $50,000 have been expended during this time, the financial support coming from a generous citizen of Philadelphia. It is not known, however, how long this support will continue. During the past year and a half the laboratory has devoted a considerable part of its activities to chemotherapeutic studies. The toxicity of various preparations of mercury have been investigated and efforts made to produce a mercurial compound of greater efficacy than those already in use. A number of new organic mercurial preparations were made in the laboratory and tested out on animals infected with experimental trypanosomiasis. This work not being immediately fruitful, the problem was temporarily laid aside and work was begun on arsenical compounds. Incidental to this work, salvarsan was reproduced and a number of allied arsenobenzol products made and tested out. In view of the shortage of salvarsan resulting from the war, it was decided to make and distribute salvarsan under its chemical name of arsenobenzol. [The name arsenobenzol, by right of priority, belongs to the compound $C_6H_5As:AsC_6H_5$. While this term is also used as a synonym for salvarsan, arsenphenolamin hydrochlorid is more descriptive and a more scientific designation for the drug. The latter is the name adopted by the Council on Pharmacy and Chemistry, and is in New and Nonofficial Remedies. It would seem that arsenobenzol is too firmly established in chemical literature to be ignored, and, further, it is not a correct description of the compound known as salvarsan.—Ed.] The director of the laboratories had a conference with the New York representative of the Farbwerke Hoechst and informed him that in the interests of humanity and the public health, the laboratories had determined to supply arsenobenzol to physicians and hospitals having urgent need for the same. During the course of this conversation is was a feeling of both parties to the interview that no court of equity would issue an injunction against the manufacture and distribution of a drug that was saving life and conserving the public health at a time when such drug could not be supplied by the patentees. It is stated that the arsenobenzol made by the dermatological laboratories has now

been employed on hundreds of cases with excellent therapeutic results, and with no report of any accidents or untoward complications. The drug is slightly less soluble than the German product and the solution requires to be filtered. It is prepared otherwise in the same manner as salvarsan and must be neutralized by the addition of sodium hydroxid solution. The toxicity tests on animals and the therapeutic tests in rats infected with experimental trypanosomiasis give substantially the same results as those obtained from the Ehrlich product. The dermatological research laboratories will distribute the drug at the antebellum figure of $3.00 per tube for ampoules containing 0.6 gm. and $2.50 per tube for ampoules containing 0.4 gm. In order that the drug may be supplied to as many hospital patients as possible, it has been decided to distribute the arsenobenzol to hospitals at the rate of $2.00 for the 0.6 ampoule and $1.50 for the 0.4 ampoule, with the understanding that such drug is to be used only on ward and dispensary patients. It was the desire of those connected with the laboratory further to reduce the price of the drug to hospitals, but legal advice to the effect that such reduction might ultimately injure the market of the patentees, has for the present restrained such action. The pledge is given that any profits that may accrue from the sale of this drug shall be exclusively devoted to the establishment of a fund for further scientific research and no part thereof shall inure to the benefit of any individual. The chemical work is carried out under the supervision of Dr. G. W. Raiziss and the pathologic work under Dr. John A. Kolmer.

WAR NOTES

Appreciation of Red Cross.—A letter has been received at American Red Cross headquarters from Count Talleyrand-Perigord who is assigned by the German Red Cross to look after the welfare of the Americans and cooperate with them in their relief work among the wounded at Gleiwitz and Kosel, in which he pays eloquent tribute to the skill and efficiency, devotion and self sacrifice of the personnel of the American Red Cross units.——The empress of Russia has conveyed to the American Red Cross Society sincere expressions of her gratitude for the gifts to the Russian Red Cross and the assistance the American Red Cross Society has given the sick and wounded.——Queen Eleanore of Bulgaria has cabled to the American Red Cross expressing her heartfelt gratitude for the succor furnished to the Bulgarian sick and wounded by the Red Cross.

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended December 11, lists the following contributions.

Buffalo Medical and Surgical League, Buffalo, N. Y.	$ 5.00
Washington County Medical Society, Calais, Me.	25.00
Receipts for the week ending December 11	$ 30.00
Previously reported receipts	7,873.84
Total receipts	$7,903.84
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at 2.30	2,930.20
353 standard boxes of food at 2.28	804.84
Total disbursements	7,310.04
Balance	$ 593.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

FOREIGN

Hospital Opened in Colon.—The Samaritan Hospital, a private institution with twenty-five beds, has been opened in the city of Colon, Panama. It is owned and operated under the direction of Drs. S. J. Taylor and Harry Eno. It is the first private hospital in the republic of Panama since the American occupation of the Canal Zone.

Foot and Mouth Disease.—In 1911 and 1912 Ireland had an epidemic of foot and mouth disease, and again in 1914 in a more severe form. The disease appeared in England in the fall of 1913, and in January, 1914, the first case was reported in Ireland. By June the loss from the disease had been estimated at $9,000,000. It was thought the disease might have been brought to Ireland by drovers from the lairages in England. It was also suspected that the disease might have been brought in by straw packing from the continent.

PARIS LETTER

Paris, Nov. 25, 1915.

The War

SCIENTIFIC INVENTIONS BEARING ON THE NATIONAL DEFENSE

The minister of public instruction in the new cabinet is a scientist, M. Painlevé, who is well known as a mathematician. Believing that the problems of national defense call for the aid of all the intellectual forces of the country, M. Painlevé has just created in the department of public instruction, for the duration of the war, a division of investigations bearing on the national defense. This division has the task of examining inventions and also of undertaking scientific researches which are called for by the war and navy departments.

NERVOUS SYMPTOMS IN WOUNDED PATIENTS

The Société de neurologie de Paris recently held two extraordinary sessions, under the presidency of Prof. Gilbert Ballet, to study the methods of clinical examination and the course to be pursued in cases in which exaggeration or simulation of certain nervous symptoms is suspected in wounded patients. The medical service had convoked the heads of all the military neurologic centers to take part in these sessions. Such a meeting had been much desired by French neurologists who for a year had to treat wounded patients with nervous symptoms. The opportunity to exchange scientific and practical opinions on the subject created much interest. At the end of the session, the society passed the following resolutions, which were transmitted to the medical service:

1. In each of the armies, neurologic and psychiatric centers, such as already exist in several of them, should be formed. In such centers all patients affected with nervous and mental conditions and all those suspected of simulation or exaggeration should be examined. The purpose should be, on the one hand, to recognize, before they are removed to the special centers of the interior, the patients affected with lasting organic lesions, and on the other hand to avoid the removal to the rear of patients suspected of simulation and exaggeration or affected with nonorganic conditions, which can be recognized, treated and cured very rapidly in the zones of the armies, as appears from results already obtained in existing centers (The Journal, Dec. 11, 1915, p. 2102).

2. Soldiers suspected of simulation or exaggeration or of voluntarily prolonging their nervous troubles should be sent to special services where they can be under competent medical oversight and severe military discipline at the same time. Experience has shown the value of such measures in certain neurologic centers where they have been applied. It would be desirable that such special services be attached to the military neurologic centers already existing, if the heads of these centers are able to operate them.

3. The opinions of the physicians of the neurologic centers with regard to a soldier dismissed by them should be taken into account wherever the soldier may go.

4. Under no circumstances, at present, should soldiers affected with psychoneuroses be sent for discharge to the committees that arrange discharges.

5. In view of the great number of diagnostic errors in cases of wounded men with nervous symptoms, it would be desirable that in each region, or group of regions, neurologic experts should regularly visit all hospitals and other places where patients are under treatment. These experts should make notes on each neurologic case for the information of the committees that arrange discharges and to enable the attending physicians to form an opinion of the propriety of sending the soldiers back to service or to one of the neurologic centers.

6. In view of the delicate scientific and practical problems which daily present themselves with regard to soldiers in neurologic hospitals, it would be desirable that the heads of the neurologic centers should have the opportunity to meet from time to time in order to coordinate their efforts to render the course of action uniform.

M. Justin Godart, undersecretary of the military medical service, informed the Société de neurologie de Paris that he was forwarding to the director-general of the medical service of the armies, with his approval, the resolutions passed by the society. Experience has shown, he said, the justification for forming neurologic psychiatric centers in each of the armies. So far as the second resolution is concerned, it would be simple to form, instead of special services, departments annexed to the neurologic centers operating under competent medical direction and with a more severe discipline. Resolutions 3, 4 and 5 have his unqualified approval.

As for Resolution 6, M. Godart is ready to approve the meetings requested provided they are not too frequent.

CASES OF DEAFNESS AND MUTISM FROM WAR ACCIDENTS

It is well known that the powerful explosives employed in the present war sometimes produce complete deafness and mutism unaccompanied by any apparent lesion. When the patient does not recover from his mutism spontaneously in a few weeks, the case is almost always incurable. Dr. Marage has just made a report to the Académie des sciences on this subject. He has devised a system of mechanical vibratory massage of the larynx and the sides of the neck. Thus the external and internal muscles of the larynx are acted on. At the end of a few days, the patients begin to talk, and at the end of three weeks they entirely recover their usual speech. This applies to those who have been deaf and mute for four or five months, and in whom all other methods of treatment have failed.

Dr. André Castex recently read before the Académie de médecine a paper on the various kinds of deafness produced by the explosion of large projectiles. Such cases are ordinarily due to the explosion of a shell which plows up the earth, throws a man several yards up into the air or buries him under a mass of earth. Sometimes the noise of near battle is sufficient to make a combatant deaf. These cases of war deafness, according to seventy-seven observations of Castex, may be divided into two principal classes: (1) rupture of the tympanum and (2) rupture of the labyrinth. 1. Rupture of the tympanum is produced especially when the projectile, ball or shrapnel strikes the temporal or mastoidean region or when a shell produces a slight concussion. 2. Rupture of the labyrinth is observed when a shell of large caliber which shakes the whole trench sends a man into the air. It often coincides with cerebral disturbance. Prognosis is very grave for the hearing. It has been necessary to discharge the greater number of soldiers affected with rupture of the labyrinth. Auditive reeducation by the natural voice and, still more, exercises in lip reading are the best means of compensating for this infirmity.

THE WAR AND STUDENTS AT THE FACULTÉ DE BEYROUTH

M. Barthe, a deputy, reported to the minister of public instruction that many foreign students had been compelled by the closing of the Faculté de médecine de Beyrouth to discontinue their studies there. The climate of Montpellier being the most similar to that of Beyrouth, M. Barthe asked if the students from Beyrouth could not continue their courses at the Faculté de médecine de Montpellier. The minister of public instruction replied that the students from Beyrouth might, with the consent of the department of foreign affairs, carry on their studies either at Montpellier or any other university of their selection.

RESUMPTION OF EXCHANGE OF SERIOUSLY WOUNDED PRISONERS

The next exchange of seriously wounded French and German prisoners will take place December 2. A train of wounded German prisoners will come from Lyons and one or two trains of wounded French prisoners from Constance. The number of patients to be sent back to their country is not large, because in the recent fighting the greater number of seriously wounded men were gathered in and cared for by their own armies and have not been made prisoners.

ACUTE NEPHRITIS OBSERVED IN THE TROOPS IN THE FIELD

At the same session of the Académie de médecine de Paris, Drs. J. Parisot and Ameuille of Paris called attention to the fact that observations on the troops in the field have shown an altogether abnormal number of cases of apparently spontaneous acute nephritis, which might be called cryptogenetic, for their origin is very obscure. These cases of nephritis have nothing in common with what has been called albuminuria of fatigue. They are true nephritis accompanied sometimes by anasarca, sometimes by serious uremic manifestations, too often terminated by death. Because of their frequency, their seriousness and their rapid course and also because of deceptive symptoms which they often manifest at the outset they deserve much attention; it is important that they should be treated early. Their seriousness, in fact, seems to increase in proportion as treatment is late. From these facts one practical conclusion appears: In spite of the difficulties in the way, physicians called on to give the first care to patients from the ranks should consider examination for albuminuria as important as for fever.

PHARMACISTS IN THE ARMIES

M. Derognat, a deputy, has called the attention of the minister of war to the fact that pharmacists in the army, having no military grade, are subject to all the demands made on a mere orderly, such as sweeping and scrubbing rooms. M. Derognat asked if it would not be possible to give the pharmacists, even those of the second class, the rank of pharmacist *aide-major* or at least auxiliary pharmacist with the grade of adjutant while keeping them in the group of male nurses with whom they are already classed. The minister replied that 304 pharmacists *aides-majors* of the second class (ranking as second lieutenants) have been appointed since May 7, 1915. Auxiliary pharmacists will be selected from the pharmacists of the first and second class as well as pharmaceutical students of three or even, under certain conditions, two years' school work; but these appointments will be made only as need for them arises.

Use of Condensed Radium Emanation in Glass Tubes

Dr. Debierre, professor of anatomy at the Faculté de médecine de Lille, and Dr. Regaud, agrégé professor of anatomy at the Faculté de médecine de Lyon, made a report to the Académie des sciences on the possibility of utilizing therapeutically, in place of radium, radium emanation collected and condensed in glass receptacles chilled by immersion in liquid air. Glass tubes containing radium emanation and sealed with a blow pipe constitute the most simple, economical, surest and most varied apparatus for biologic applications. The only inconvenience of the employment of concentrated emanation is due to the fact that it produces a certain loss of radio-active energy from the incessant destruction of the emanation in the mother radium solution. On the other hand, the procedure presents the following advantages: the assured security of the radium, which thus ceases to circulate among users; the variety of shapes for the apparatus in which it can be applied; finally the possibility of any physician being able to procure the active agent without acquiring the mother substance.

Death of Professor J. Ville

The death of Dr. Jules Ville, professor of medical chemistry at the Faculté de Montpellier, is announced.

Marriages

THOMAS HENRY BATES, M.D., Madison, Fla., to Miss Mamie Fairfax Dunstan of Houston, Texas, in New Orleans, November 25.

OLIVER AMES LOTHROP, M.D., Boston, to Miss Edna M. Sturk of Aylesford, N. S., at Cambridge, Mass., November 24.

PERCY EDWIN DUNLOP MALCOLM, M.D., to Miss Janne Wolff both of New York City, at Montclair, N. J., November 13.

NELSON LEE ROY HELLER, M.D., Dunkirk, Ind., to Miss Pauline Jeanette Current of Red Key, Ind., Octobe: 22.

LOUIS VAN PATTEN, M.D., St. Charles, Ill., to Mrs. Caroline Gillette of Aurora, Ill., at Elgin, Ill., November 25.

JOHN EDSON BOLENDER, M.D., Cadillac, Mich., to Miss Maud Kepple of Grand Rapids, Mich., November 25.

JOSEF BENSEN SCHROCK, M.D., to Miss Lois Estelle Duffie, both of Scottsbluff, Neb., at Omaha, December 2.

GUY OTEY SHIREY, M.D., Fort Worth, Texas, to Miss Louise Ball of New Boston, Texas, November 3.

HARRY MOLLYNEAUX BROWN, M.D., to Miss Reba Hildebrant, both of New Vienna, Ohio, November 30.

ANTONIO B. JANNARELLI, M.D., to Mrs. Sophia Johrous Monteleone, both of New Orleans, October 26.

FREDERICK SMITH BAIRD, M.D., to Miss Mary Jane Lawrence, both of Bay City, Mich., November 27.

WARFIELD THEOBALD LONGCOPE, M.D., to Miss Janet Percy Dana, both of New York City, December 2.

MARY MERRITT CRAWFORD, M.D., Brooklyn, to Mr. Edward Schuster of New York City, November 30.

WILLIAM H. TREIBLE, M.D., to Miss Camilla J. Steig, both of York, Pa., in New York City, recently.

ARRIE BAMBERGER, M.D., to Miss Amelia Miriam Hitzelberger, both of Chicago, November 25.

CHARLES E. WHITEHEAD, M.D., to Miss Eleanor M. Flynn, both of Logan, Mont., December 1.

RALPH MONTGOMERY GOSS, M.D., to Miss Calenda King, both of Athens, Ga., November 24.

GEORGE DAVID WOLF, M.D., to Miss Rose Bonime, both of New York City, November 25.

CLARENCE LEWIS WALTON, M.D., to Miss Clara Marek, both of Chicago, December 2.

Deaths

Ap Morgan Vance, M.D. University of Louisville, Ky., 1878; aged 61; a Fellow of the American Medical Association and president-elect of the Kentucky State Medical Association; president of the Jefferson County Medical Society; died at his home in Louisville, December 9. Dr. Vance was born in Nashville, Tenn., May 24, 1854; received his preliminary education in New Albany, Ind., and was a student in medicine of Dr. David W. Yandell, one of the most distinguished surgeons of Louisville. In addition to the society affiliations noted above, Dr. Vance was a member of the American Orthopedic Association, American Gynecological Society and Southern Surgical and Gynecological Association. He had served at various times as surgeon for the City Hospital, and Sts. Mary and Elizabeth Hospital and had been chief surgeon of the Masonic Widows' and Orphans' Home for thirty-five years. He was the only medical member of the special commission which built the new million-dollar Louisville City Hospital and was responsible for the general plans and scope of the building. Professionally Dr. Vance ranked as a pioneer in orthopedic surgery, and personally he was greatly esteemed and beloved.

Abram Alexander Smith, M.D. Bellevue Hospital Medical College, 1871; aged 68; a Fellow of the American Medical Association; a member of the New York Academy of Medicine and American Climatological Association; attending physician to Demilt Dispensary from 1873 to 1879; a member of the staff of the New York Women's Hospital from 1875 to 1879; successively lecturer on clinical medicine, lecturer on materia medica and therapeutics and professor of materia medica and therapeutics in his alma mater from 1875 to 1892; professor of principles and practice of medicine and clinical medicine in the University and Bellevue Hospital Medical College since 1898; for many years consulting physician to Columbus Hospital, the Hospital for Ruptured and Crippled and Minturn Hospital; died at his home in New York City, December 13, from heart disease.

William John Roe, M.D. Jefferson Medical College, 1895; aged 46; a Fellow of the American Medical Association; also a dentist; professor of surgical pathology and oral surgery in the Pennsylvania College of Dental Surgery, Philadelphia; first assistant demonstrator of anatomy and surgery in his alma mater; a member of the medical staff of the Philadelphia General Hospital; died in St. Mary's Hospital, Rochester, Minn., November 27, from tuberculosis of the kidney.

John R. Rathmell, M.D. Starling Medical College, Columbus, Ohio, 1883; aged 63; professor of principles and practice of medicine and diseases of children; secretary and later dean of the faculty of the Chattanooga Medical College; a member of the staff of Erlanger Hospital, Chattanooga; formerly president of the Chattanooga Medical Society, the Chattanooga Board of Health and the Tennessee State Board of Health; died at his home in Chattanooga, December 2.

Forrest Bedford Smith, M.D. University of Pennsylvania, Philadelphia, 1900; aged 47; a Fellow of the American Medical Association; local surgeon to the Southern Pacific System at Houston, Texas, and consulting surgeon to the Houston Infirmary; died in the Sunset Hospital, Houston, December 1, from acute gastritis for the relief of which operations had been performed without success.

Ezra B. Hiestand, M.D. Starling Medical College, Columbus, Ohio, 1863; Bellevue Hospital Medical College, 1872; aged 85; the oldest practitioner of Hardin County, Ohio, and a charter member of the Hardin County Medical Society; in honor of whose eightieth birthday anniversary a celebration was held in 1910; died at his home in Kenton, Ohio, November 28, from heart disease.

William Richter Longshore, M.D. Pennsylvania Medical College, Philadelphia, 1860; aged 77; a member of the Medical Society of the State of Pennsylvania; a veteran of the Civil War in which he served as surgeon of the Ninth Pennsylvania Volunteer Infantry; for many years surgeon of the Ninth Infantry, N. G., Pa.; died at his home in Hazelton, Pa., December 1, aged 77.

Eugene James Gallagher, M.D. Albany (N. Y.) Medical College, 1892; aged 47; a member of the Medical Society of the State of New York; district health inspector of Yonkers, N. Y.; formerly chief of the Kingston, N. Y., City Hospital and health officer of that city; died in the Polyclinic Hospital, New York City, December 3, from disease of the kidney.

Asa Pingree Reed, M.D. Tufts College Medical School, Boston, 1895; aged 59; a member of the Maine Medical Association; formerly of Naples, Maine, but for the last three years a member of the staff of the Douglass Sanitarium, Dorchester, Boston; also a druggist and editor of the *Physicians' Drug News;* was found dead in his office, December 2.

Jesse Porter Hendrick, M.D. University of Texas, Galveston, 1893; aged 50; a member of the State Medical Association of Texas and a well-known practitioner of Huntsville; who was operated on for appendicitis in a sanatorium in Houston, November 18, and was apparently doing well; died suddenly, November 22, from cerebral hemorrhage.

James Walter Baird, M.D. College of Physicians and Surgeons, Baltimore, 1874; aged 65; formerly a member of the Medical Society of Virginia; died at his home near Waverly, Surry County, Va., November 30, from the effects of a gunshot wound of the head believed to have been self-inflicted while suffering from depression due to ill health.

Joseph McDowell McKamey, M.D. University Medical College, Kansas City, Mo., 1910; aged 33; a member of the Kansas Medical Society; of Kingman, Kan.; whose skull was fractured in a collision between his automobile and a railway train at a grade crossing at Pretty Prairie, Kan.; died in a hospital in Kansas City, December 2.

George Washington Welty, M.D. Bellevue Hospital Medical College, 1870; aged 70; a member of the Medical Society of the State of New York; for many years a member of the Brooklyn Charities Board and director of St. Vincent's Home for Friendless Boys, Brooklyn; died at his home in that city, December 1, from heart disease.

Lansing Van Auken, M.D. Albany (N. Y.) Medical College, 1892; a member of the Medical Society of the State of New York; pastor of the First Presbyterian Church at Watervliet, N. Y., and inventor of a well-known shock absorber for automobiles; died at his home in Watervliet, November 27.

Walter I. Pennock, M.D. University of Pennsylvania, Philadelphia, 1888; aged 47; a Fellow of the American Medical Association and for twenty years a practitioner of Philadelphia; died at his home in that city, November 28, from a gunshot wound, self-inflicted, it is believed, with suicidal intent.

William M. Stratton, M.D. Northwestern University Medical School, Chicago, 1870; aged 71; formerly a member of the Minnesota State Medical Association and for more than forty years a practitioner of Granite Falls; died at his home in that place, November 9, from cerebral hemorrhage.

Merritt Walter Hall, M.D. Chicago College of Medicine and Surgery, 1910; aged 31; a Fellow of the American Medical Association; of Chicago; died at the home of his mother in that city, December 4, from the effects of poison believed to have been self-administered with suicidal intent.

Avery E. Moore (license, Arkansas, 1903), aged 59; deputy auditor of state of Arkansas from 1898 to 1905; and auditor of state from 1906 to 1910, when he resigned to become a member of the state tax commission; died at his home in Enders, Ark., November 22, from tuberculosis.

Jonas Müller, M.D. University and Bellevue Hospital Medical College, 1913; aged 25; president of the medical board of the Bedford Hospital and Dispensary, Brooklyn; died in the Jewish Hospital, Brooklyn, December 2, two weeks after a surgical operation on the nose.

Benjamin L. Smith, M.D. University of Maryland, Baltimore, 1859; aged 77; a member of the Medical and Chirurgical faculty of Maryland; twice a member and for five terms chief clerk of the House of Delegates, Maryland; died at his home in Madison, Md., November 23.

John A. Brill, M.D. Cincinnati College of Medicine and Surgery, 1884; aged 64; a member of the Illinois State Medical Society and a well-known practitioner of the northwest side of Chicago; died at his home in that city, December 4, from cerebral hemorrhage.

William H. Bogle, M.D. Jefferson Medical College, 1885; aged 58; for several years division surgeon for the Missouri Pacific Railway and local surgeon for the Santa Fe and Burlington systems at Atchison, Kan.; died at his home in that city, November 30.

John William Wickham, M.D. Vanderbilt University, Nashville, Tenn., 1885; aged 55; of Palmyra, Tenn.; who was shot November 29 in a quarrel at Hackberry, Tenn., by Charles Baggett; died from his wounds in a hospital at Nashville, November 30.

Calvin Starr, M.D. Western College of Homeopathic Medicine, Cleveland, 1851; aged 93; a practitioner of Iowa City, Iowa, from 1857 to 1877, and thereafter a resident of Nebraska City and Beatrice, Neb.; died at his home in the latter city, November 25.

Aaron B. McCallon, M.D. College of Physicians and Surgeons, Dallas, Texas, 1907; aged 37; of Cresson, Texas; a member of the State Medical Association of Texas; was shot and instantly killed in an affray on the main street of Cresson, September 24.

Elmer E. Horn, M.D. Medico-Chirurgical College of Philadelphia, 1889; aged 53; surgeon to the North Pennsylvania Hospital and Sanatorium; later a practitioner of Linden, Pa., died in the Williamsport (Pa.) Hospital, December 2, from carcinoma.

Ernest David Disbrow, M.D. Rush Medical College, 1880; aged 57; a member of the Illinois State Medical Society; formerly secretary of the Grand Rapids (Mich.) Academy of Medicine; died at his home in Chicago, December 4, from cerebral hemorrhage.

Nathaniel Ritter, M.D. Jefferson Medical College, 1861; aged 76; for fifty-four years a practitioner of Lehigh County and Allentown, Pa.; was instantly killed, November 21, near Amityville, Pa., by the overturning of an automobile in which he was riding.

Commodore Perry Devore, M.D. Eclectic Medical Institute, Cincinnati, 1871; aged 77; for many years a practitioner of Sutter, Calif., but for the last nine years a practitioner of Drain, Ore.; died at his home in that place, November 19, from heart disease.

Morgan Propst, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1884; aged 65; physician of Fillmore County, Neb., and a member of the Board of Health of Geneva, Neb.; died at his home in that city, October 9, from uremia.

John O. Foree, M.D. University of Louisville, Ky., 1888; aged 60; a member of the Tennessee State Medical Association; a well-known practitioner and druggist of Athens, Tenn.; died at his home in that place, November 26, from pneumonia.

Gregory Paul (examination, N. Y., 1888); aged 57; a native of Asia Minor and an alumnus and for many years professor of medicine in the University of Aintab, Turkey; died in the Post-Graduate Hospital, New York City, November 23.

James A. Porter, M.D. Detroit Medical College, 1869; aged 70; for many years a practitioner of Brooklyn, Mich., and a specialist on diseases of the eye and ear; was found dead, from heart disease, in his barn in Brooklyn, November 27.

Laughlin Sinclair, M.D. University of Michigan, Ann Arbor, 1864; Victoria College, Coburg, Ont., 1867; aged 76; dean of the medical profession of Bruce County, Ont.; died at his home in Walkerton, Ont., September 21, from uremia.

Henry Harrison Riegel, M.D. Jefferson Medical College, 1857; aged 79; continuously a practitioner of Pennsylvania for fifty-eight years; a Fellow of the American Medical Association; died at his home in Catasauqua, November 25.

John Antis, M.D. College of Physicians and Surgeons of the Western District of New York, Fairfield, 1837; aged 98; since 1845 a practitioner of Grundy County, Ill.; died at the home of his daughters in Mazon, Ill., November 25.

George B. Newell Clow, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1880; Rush Medical College, 1883; aged 59; a Fellow of the American Medical Association; of Oakland, Calif.; died in Palo Alto, Calif., November 23.

Samuel A. Woods, M.D. Jefferson Medical College, 1900; aged 39; a Fellow of the American Medical Association; a well-known practitioner of Sharon and coroner of Mercer County, Pa.; died at his home in Sharon, November 24.

Samuel Milton Littlefield, M.D. Rush Medical College, 1884; aged 55; a member of the Iowa State Medical Society and a practitioner of Andrew, Iowa; died in the Iowa Sanitarium, Maquoketa, November 30, from nephritis.

Beatty R. Spurr, M.D. Transylvania University, Lexington, Ky., 1848; aged 90; for more than thirty years a practitioner of Greendale, Ky., and later a resident of Stroud, Okla.; died at his home in that city, November 4.

Thomas Jefferson Upshaw, M.D. American Medical College, St. Louis, 1890; aged 71; a veteran of the Civil War; and for many years a practitioner of St. Louis; died at the home of his son in that city, November 22.

James Mack Sharet, M.D. University of Tennessee, Nashville, 1874; aged 44; a member of the Florida Medical Association; of Milton, Fla.; died in the Pensacola Hospital, November 11, from intussusception.

Albert Augustus Lindabury, M.D. Baltimore Medical College, 1886; Hahnemann Medical College, Philadelphia, 1890; aged 53; of Scranton, Pa.; died in the Scranton State Hospital, November 22, from diabetes.

Francis A. Mitchell, M.D. University of Louisville, Ky., 1883; aged 82; for many years a practitioner and druggist of New Albany, Ind.; died at his home in that city, November 25, from cerebral hemorrhage.

Adelard M. Brunelle, M.D. University of Minnesota, Minneapolis, 1886; aged 58; a member of the Minnesota State Medical Association; died at his home in Cloquet, Minn., November 25, from heart disease.

Wilkins T. Brandon, M.D. Vanderbilt University, Nashville, Tenn., 1880; aged 56; formerly a member of the State Medical Association of Texas; died at his home in Fulbright, Texas, October 19, from nephritis.

John Patrick Stanton, M.D. University and Bellevue Hospital Medical College, New York City, 1899; of Scranton, Pa.; was instantly killed in an automobile accident near Wilkes-Barre, Pa., November 24.

Charles F. O'Neill, M.D. Michigan College of Medicine and Surgery, Detroit, 1897; aged 44; of Middleton, Mich.; died in St. Mary's Hospital, Grand Rapids, Mich., November 19, from pulmonary embolism.

Merle Cornelius Newkirk, M.D. Johns Hopkins Medical School, Baltimore, 1913; aged 28; of Sherman, N. Y.; died at the home of his parents in Ellicottville, N. Y., November 23, from disease of the throat.

Clifford J. Oliveros, M.D. Baltimore University School of Medicine, 1890; aged 49; of Columbia, S. C.; a specialist on diseases of the eye, ear, nose and throat; died at his home in Columbia, November 17.

C. N. Frazier (registration, Oklahoma, 1908); a member of the Oklahoma State Medical Association; aged 37; died at his home in Hugo, Okla., September 3, from congestion of the liver.

Orson Gregory Dibble, M.D. New York University, New York City, 1869; aged 75; for fifteen years health officer of the town of Pompey, N. Y.; died at his home, November 24.

William Henry Morse, M.D. Bellevue Hospital Medical College, 1871; aged 65; died at his home in Bronx Borough, New York City, November 26, from cerebral hemorrhage.

J. Benson Hill (license, Michigan, twelve years of practice, 1900); aged 71; for twenty-seven years a practitioner of Ovid, Mich.; died at his home in that place, November 23.

Thomas Jefferson Sherlock, M.D. Eclectic Medical Institute, Cincinnati, 1893; aged 70; of Hart, Mich.; died in Butterworth Hospital, Grand Rapids, Mich., November 20.

Edward M. Royall, M.D. Medical College of the State of South Carolina, Charleston, 1849; aged 88; died at his home in Mt. Pleasant, S. C., about November 23.

William D. Chase, M.D. Hospital College of Medicine, Louisville, 1904; aged 40; was found dead in bed at his home in Milligan College, Tenn., November 21.

John A. Welch, M.D. Central College of Physicians and Surgeons, Indianapolis, 1883; aged 68; died at his home in Lena, Ind., November 18, from nephritis.

Henry Eugene Robinson, M.D. University of Colorado, Boulder, 1911; aged 30; of Ogden, Utah; died in Hooper, Utah, November 20, from tuberculosis.

Samuel J. Stone, M.D. Chicago College of Medicine and Surgery, 1914; aged 35; died suddenly in his office in Butte, Mont., October 3, from uremia.

David Yiengst Roebuck, M.D. University of Pennsylvania, Philadelphia, 1866; aged 71; died at his home in Dalton, Ohio, about November 20.

Peter H. Banta, M.D. Detroit College of Medicine, 1900; aged 41; died at his home in De Witt, Mich., November 26, from disease of the stomach.

Leopold Charles Shulke, M.D. St. Louis College of Physicians and Surgeons, 1905; aged 32; died at his home in Decatur, Ill., November 19.

Bezaleel Bell Andrews, M.D. Hahnemann Medical College, Chicago, 1878; aged 70; died at his home in Nemaha, Neb., about November 16.

A. W. Goodman, M.D. University of Nashville, Tenn., 1862; aged 75; died at his home in Elkton, Ky., November 19.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

OZOMULSION

Ozomulsion is one of several nostrums put out by the T. A. Slocum Company of New York City. Nearly ten years ago Mr. Samuel Hopkins Adams *(Collier's,* Jan. 13, 1906) had something to say about the Slocum nostrum factory and the man who was at that time proprietor of the concern, one A. Frank Richardson. To quote from part of Mr. Adams' article:

> "The Slocum Consumption Cure proper consists of a gay-hued substance known as 'Psychine.' Psychine is about 16 per cent. alcohol, and has a dash of strychnin to give the patient his money's worth. Its alluring color is derived from cochineal. It is 'an infallible and unfailing remedy for consumption.' Ozomulsion is also a sure cure, if the literature is to be believed. To cure one's self twice of the same disease savors of reckless extravagance, but as 'a perfect and permanent cure will be the inevitable consequence,' perhaps it's worth the money. It would not do to charge Dr. T. A. Slocum with fraud, because he is, I suppose, as dead as Lydia E. Pinkham; but Mr. A. Frank Richardson is very much alive, and I trust it will be no surprise to him to see here stated that his Ozomulsion makes claims that it cannot support, that his Psychine is considerably worse, that his special cure offer is a bit of shameful quackery, and that his whole Slocum Consumption Cure is a fake and a fraud so ludicrous that its continued existence is a brilliant commentary on human credulousness."

The nostrum, "Psychine" which, previous to the passage of the Food and Drugs Act, was labeled "An Infallible Remedy for Consumption" to be later modified to "Wonderful Remedy for Consumption" and still later to be changed to "Tonic Appetizer and Aid to Digestion" has, apparently, not occupied much space in the public prints during the last few years. Ozomulsion, however, has, apparently, been kept alive by advertising. In April, 1915, the United States Attorney for the Southern District of New York, acting on a report by the Secretary of Agriculture, filed two informations against the T. A. Slocum Company, alleging that the concern had shipped two consignments of Ozomulsion from the state of New York into the state of Tennessee in violation of the Food and Drugs Act. The product was declared misbranded in both informations on the ground that the therapeutic claims made on the carton were "false and fraudulent." Moreover, the government declared that these claims:

> ". . . were applied to said article knowingly and in reckless and wanton disregard of their truth or falsity, so as to represent falsely and fraudulently to the purchasers thereof, and create in the minds of purchasers thereof the impression and belief that it was in whole or in part composed of, or contained, ingredients or medicinal agents effective for permanently curing tuberculosis, consumption, phthisis, whooping cough, pneumonia, and all kinds of lung diseases, St. Vitus's dance, epilepsy, night sweats, and malaria, when, in truth and in fact, said article was not in whole or in part composed of and did not contain ingredients or medicinal agents effective for curing tuberculosis, consumption, phthisis, whooping cough, pneumonia, and all kinds of lung diseases, St. Vitus's dance, epilepsy, night sweats, and malaria."

The product was declared misbranded further because of the claims made that Ozomulsion would cure pneumonia and prevent the development of consumption "when in truth and in fact, said article was not in whole or in part composed of, and did not contain, ingredients or medicinal agents effective for curing pneumonia or for preventing the development of consumption following pneumonia, or at any other time."

The analysis made by the federal chemists was summed up in the statement "sample appears to be an emulsion of cod liver oil and glycerin with the addition of phosphorous compounds of calcium and sodium." The chemists also call attention to the fact that their tests indicated that the cod liver oil used in this emulsion "had not been ozonized." This claim about "ozonizing" the oil used in the nostrum has long been one of the talking points; in fact the old trade-package declared that Ozomulsion was a combination of ozone, cod liver oil and other ingredients "OZONIZED BY ELECTRICITY (Slocum's French method) for the purpose of replacing by ozone the oxygen consumed by the system in digesting cod liver oil."

The T. A. Slocum Company pleaded guilty to the government's charges and was fined $80. This can hardly be considered an excessive punishment for a concern engaged in the business of defrauding the sick in general and consumptives in particular. The details of this case will be found in *Notice of Judgment 3979,* issued Oct. 21, 1915.

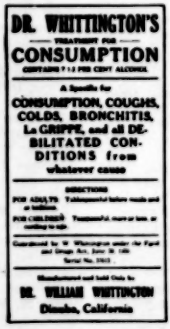
DR. WHITTINGTON'S TREATMENT FOR CONSUMPTION

"Dr. Whittington's Treatment for Consumption" is, according to the label, "manufactured and sold only by Dr. William Whittington, Dinuba, Cal." According to our records, Dr. William Whittington was graduated by the Missouri Medical College of St. Louis, Mo., in 1880 and was licensed to practice in California in 1891. The preparation, which admittedly contains 7.5 per cent. alcohol, is labeled:

> "A Specific for Consumption, Coughs, Colds, Bronchitis, La Grippe and All Debilitated Conditions from whatever cause."

The bottle contains about twelve ounces of a brown, sirupy liquid and sells for $5.00. In reply to an inquiry sent to Whittington by a supposedly consumptive layman, there came a letter signed "W. Whittington," reading in part as follows:

> ". . . I have a treatment that DOES CURE CONSUMPTION. The cost of the treatment is $20.00 for each month's treatment. You can get it one month at a time or more as you like. If you wish to try it you better take one month's treatment at first to see what it will do for you. But if you take it for one month I know you will send back for more. For I know it will do you good. For THIS IS THE ONLY TREATMENT THAT DOES REALLY CURE CONSUMPTION. As to how long you will need to take it depends on your condition. It takes from three to six months to cure. If you have not had it long three months may cure you. If you are very bad it will take longer . . ."—[Capitals ours.—Ed.]



Reduced photographic facsimile of the label on Whittington's "consumption cure." It obviously violates the federal Food and Drugs Act.

Requests have come in at different times for information regarding this nostrum. A bottle of Whittington's "Specific" was examined in the Chemical Laboratory of the American Medical Association. The condensed report of the chemist follows:

> "The liquid had an odor of raspberry and prunes and also somewhat vinous characteristics, with a tannin-like taste. The reaction toward litmus was acid. The specific gravity at 15.6 C. was 1.0963. The weight of ash from 100 c.c. was 0.73 grams. Qualitative tests indicated the presence of alcohol, magnesium, tannin and other vegetable acids, acetate, sugar, glycerin, and traces of calcium, potassium and sodium. Tests for the following yielded negative results: heavy metals, haloids, sulphates, alkaloids, emodin-bearing drugs, benboate, cinnamate, salicylate and glycyrrhiza. From this analysis it appears that 'Dr. Whittington's Treatment for Consumption' is a flavored syrup, devoid of potent ingredients other than alcohol."

Selling flavored syrup as a "cure" and "specific" for consumption is a disreputable enough business under any cir-

cumstances, but what shall be thought of a physician who will carry on such a trade? Whittington's case is of more than ordinary interest to the medical profession because the man is not only a member of that profession, but a member of the Medical Society of the State of California.

ROGERS' CONSUMPTIVE CURE AND COUGH LOZENGES

"Rogers' Consumptive Cure and Cough Lozenges" and "Rogers' Inhalant" were two products sold by the M. J. Rogers Medical Company of Lewiston, Maine. According to a government report the former product bore on the labels such claims as:

"Rogers' Consumptive Cure and Cough Lozenges. Are good for Lung Troubles of all kinds. . ."
"For Whooping Cough they are a ready relief."
"For Coughs, new and of long standing, they are unsurpassed."
"They can be confidently relied upon as an *infallible cure* for all pulmonary troubles of every description."
". . . warranted to effect entire and permanent cures in every case curable at all. . ."

The latter preparation bore such claims as:

"Rogers' Inhalant Is the Greatest Discovery of Modern Medical Science, for the positive cure of Catarrh, Asthma, Hay Fever, Rose Cold, Cold in Head, Influenza, Headache, Pneumonia, Bronchitis, Diphtheria, Hoarseness, Loss of Voice, Bleeding of the Lungs, Pleurisy, and all diseases leading to Consumption."

The government officials filed an information against the M. J. Rogers Medical Company alleging that these two products, which had been shipped in interstate commerce, were misbranded because of the false and fraudulent claims for curative effect that had been made for them. The government chemists, who analyzed both the lozenges and inhalant, reported that the former "consists of sugar lozenges containing a small amount of gum and a trace of oil of rosemary" and that the latter was "an alcoholic solution of volatile oil, chiefly rosemary." The false and fraudulent therapeutic claims made, only a few of which we have quoted, were declared by the federal officials to have been applied to the articles "knowingly and in reckless and wanton disregard of their truth or falsity." This concern did not plead guilty but entered a plea of *nolo contendere* which was equivalent to admitting that they were not prepared to substantiate the claims they had made. The M. J. Rogers Medical Company was fined $15, the case being described in *Notice of Judgment 3986*, issued Oct. 21, 1915.

Correspondence

The "Autolysin" Treatment for Cancer

To the Editor:—In the Nov. 6, 1915, issue of THE JOURNAL there was printed a special article by Dr. Richard Weil regarding the autolysin treatment of cancer. In this article Dr. Weil attempts to analyze the situation respecting autolysin, the method of its introduction in the General Memorial Hospital and the nature of the patients who were treated in this institution, and states what his own conclusions are regarding its merits. It has been difficult for me to believe that Dr. Weil would so wilfully misrepresent the entire situation.

Dr. Weil was a member of my department in the medical school for many years, so that I am well acquainted with him. I cannot believe, however, in this instance that he is acting solely from good motives in making the statements that he has printed. I know, personally, that his present statements are not at all in accord with the views which he expressed to me at the time the work was in progress at the hospital.

It is impossible for me to make an adequate reply to his statement without analyzing it in detail. Such a statement has been prepared and is evidently in its length and its character unsuitable for publication in THE JOURNAL. It will, however, be printed elsewhere.

The misrepresentations which Dr. Weil has made occur not only in the form of direct categorical statements but also in the inferences which a reader unacquainted with the matter would necessarily draw from the article. These misrepresentations include such matters as the circumstances surrounding the introduction of the remedy into the hospital, the character of the patients treated in the institution and the results obtained, as well as his own relation to the experiments. He has, furthermore, misrepresented my own ideas and statements with respect to the effects produced by the remedy and the limitations surrounding its use. He has likewise made statements from which the only inference that can be drawn is that the remedy is withheld from the general use of the medical profession and that no patients can obtain this treatment except by paying very large fees. Such inferences are unjust.

A considerable amount of space is devoted to pictures and reading matter concerning a patient who received one injection of autolysin at this office and later went to the Memorial Hospital. It would appear from what Dr. Weil has said that the circumstances which he relates concerning this patient are circumstances for which I am personally responsible. I can only state in this connection that I have printed two articles in a medical journal stating my own position with regard to the autolysin treatment, and that I disclaim all responsibility for newspaper or magazine articles which have appeared in the past or may appear in the future respecting this matter.

The final conclusion which Dr. Weil draws is that from a long observation he believes the method is useless. I think it is only fair to point out that Dr. Weil's long observation consists in never having administered a single dose of autolysin and in having given very superficial examination to a few patients in an advanced condition of inoperable cancer during the early developmental period of the treatment. Final conclusions in my judgment cannot be based on such data.

Honest criticism of this method of treatment, based on adequate experience, is to be welcomed. Untruth and misrepresentation do not contribute to the progress of medical affairs in this instance to any greater degree than they have in the past. My own experience justifies me in the belief that the autolysin method of treating inoperable cancer has decided value in ameliorating the distressing conditions in a considerable percentage of cases.

S. P. BEEBE, M.D., New York.

Removal of Thyroid in Diabetes

To the Editor:—Encouraged by the experience of having several cases of glucosuria associated with exophthalmic goiter clear up when the hyperthyroidism was corrected, two cases of diabetes in young subjects with no goiter symptoms were treated by removing the greater portion of the thyroid gland. The results were as follows: One was restored to complete carbohydrate tolerance, the other to a tolerance of 9 ounces of carbohydrates per day. As only a few months have passed since these cases were so treated, end-results are yet to come; but until such time, together with a record of more cases, please publish this to establish my priority should the idea prove of value.

J. CHRISTOPHER O'DAY, M.D., Portland, Ore.

"Sewage" and "Sewerage"

To the Editor:—In your effective educational work would it not be proper to clarify an alliterative entanglement? The two nouns "sewage" and "sewerage" offer difficulties to many, as does the impossible "preventative." Sewage flows within the sewerage; the former is the liquid, the sewerage being the system of pipes which carries it off. The only sewage system is the intestinal canal, but a sewerage system is always the mains, conduits and other pipes in the ground. Sewage disposal is any method of depositing or getting rid of the excreta, whether by privy, by the use of sewers or a sewage treatment plant. If the sewers are dug up out of the ground and thrown away, that would

constitute sewerage disposal. Very frequently one sees the incorrect expressions "sewerage treatment" and "sewerage purification." Sewage is the liquid discharge—sewerage always the pipe, the connected sewers.

HAROLD B. WOOD, M.D.,
Health Officer and Secretary, Department of Health, Topeka, Kan.

Music as a Therapeutic Agent

To the Editor:—I desire information concerning the use of music by the medical profession. Some time ago Dr. Kane reported his use of music as an aid in the operating room, and also in the wards of the hospital. His report was followed by a series of humorous comments, which did not take the effort at all seriously. As far as I know, the hospitals for the insane are practically the only ones that make extensive use of music as a therapeutic agent, but I should like to receive further first-hand information. Just a little thought ought to convince any one that music could be used on logical grounds much more frequently than it is at present.

THEODORE ZBINDEN, M.D., Toledo, Ohio.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DROPPING OF PULSE BEATS

To the Editor:—Please explain the cause or causes for the dropping of pulse beats at the wrist every third or fifth beat. In many of these cases auscultation reveals only a lack of full contraction of the left ventricle, with no disturbance of rhythm in other respects. Does it indicate degeneration of the musculature of the heart or merely a nervous manifestation? Is digitalis the best treatment?

G. A. HILL, M.D., Philadelphia.

ANSWER.—By far the most common cause (in about 90 per cent. of cases) of the dropping of pulse beats at the wrist is the occurrence of premature contractions or extrasystoles. Normally the heart beat is induced in the sinus node (Keith-Flack), situated in the wall of the right auricle, and spreads over the heart from auricles to ventricles in an orderly sequence and at definitely timed intervals. This sinus node is often designated as the pace maker of the heart. In the case of extrasystoles an (ectopic) impulse arises early in diastole in some other portion of the heart which is more irritable than the sinus node. This abnormal impulse causes the heart to beat too soon, or before the normal excitation from the pace maker is due. Hence the volume of blood discharged by the ventricles is less than normal, and often is not of sufficient volume to produce a pulse wave at the wrist. At other times the contraction of the ventricle may not overcome the pressure in the aorta, and in this event there is no pulse wave, and auscultation reveals only the first sound of the heart.

In a small group of cases of extrasystole there is no evidence of cardiac disease. In another group there is disease in another part of the body which could easily be accompanied by a pathologic condition of the heart. Some of the most common of these are bronchitis, pulmonary emphysema, pulmonary tuberculosis, toxemia, exophthalmic goiter and gastric ulcer. In the majority of cases, however, there is distinct cardiac involvement, as in myocarditis, valvular disease, acute endocarditis, arteriosclerosis or angina pectoris.

Another cause for the dropping of pulse beats at the wrist is the condition of gross irregularity of the heart known as auricular fibrillation. Here the auricle does not beat in response to the pace maker, but is in a state of fibrillation. Only a few of these auricular contractile waves pass through the auriculoventricular bundle and cause ventricular contraction; but these are very irregularly timed, and may follow each other so soon as not to cause ventricular contraction of sufficient volume to produce a pulse wave at the wrist or even to raise the aortic valves. In all of these cases there is more or less myocardial insufficiency, especially of the auricles.

Finally, partial heart block may occasion the dropping of ventricular beats. In this condition the auricles beat normally in response to impulses originating in the sinus node, but there is impairment in the conduction of the impulse through the auriculoventricular bundle. Each succeeding impulse is delayed more at the bundle until an impulse fails to get through, and a ventricular contraction is missed. The repetition of this process results in periodic failure or ventricular contraction and the consequent dropping of pulse beats at the wrist.

It is impossible to generalize on the treatment of these conditions. This must depend largely on the concomitant disease. When there is evidence of myocardial insufficiency or loss of cardiac tone, digitalis may be of value.

Cardiac irregularities and their treatment were discussed recently in an editorial on "The Rhythm of the Heart" (THE JOURNAL, Oct. 21, 1915, p. 1462). An excellent discussion of this subject will be found in Thomas Lewis' "Clinical Disorders of the Heart Beat," Edition 2, Shaw & Sons, London.

MIST. HELONIN COMP. (SCHLOTTERBECK'S)

To the Editor:—Please give me any information you have about Compound Mixture of Helonin (Schlotterbeck & Foss, Portland, Me.).

E. F. HOWARD, M.D., Vicksburg, Miss.

ANSWER.—So far as we know, the only available information regarding the composition of Schlotterbeck's Mist. Helonin Comp. is the statement in a circular that the "active ingredients are Helonin, Senecin, Avenin," and the declaration on the label that it contains 45 per cent. alcohol. That is, apparently we are to assume that the mixture contains unspecified amounts of some kind of derivatives (claimed to be "resinoids") of false unicorn (*Helonias dioica*), liferoot (*Senecio aureus*) and oats (*Avena sativa*). Oats are practically devoid of resin; but this fact and the failure of the manufacturers to state the quantities are unimportant in view of the further fact that false unicorn, liferoot and oats are generally recognized as worthless drugs. Essentially, Mist. Helonin Comp. appears to be a "bracer" nostrum. The alcohol content is that of strong whisky. The mixture is highly flavored and would undoubtedly be relished by those to whom alcoholic drinks appeal, while the practically inert drugs contained in it would not in the least interfere with its use as a cordial. It is impossible to condemn too strongly the recommendations that it be given to young girls and pregnant women. The recommendation that in dysmenorrhea teaspoonful doses should be given "every fifteen or twenty minutes until relief is obtained" means, of course, until the patient is stupefied or drunk. On the basis of the information supplied by the manufacturers, Mist. Helonin Comp. may be classified as a vicious and a worthless nostrum—unless we regard the alcohol as of value.

COAGULEN

To the Editor:—Will you kindly refer me to literature on the product coagulen? Have there been any articles published about the use of this preparation in pulmonary hemorrhage? If so, what?

JOHN J. LLOYD, M.D., Catawba Sanatorium, Va.

ANSWER.—The subject appears to be still in an experimental stage. The only experimental work done on animals thus far seems to be that reported by Fonio, one of the discoverers of coagulen. He found that the coagulability of the blood was increased for only an hour after intravenous injection of the substance.

The other papers are reports of clinical experience, and the only ones that deal with the treatment of hemoptysis with coagulen are those of Juliusburger, Hotz, and Riedl. Each of these authors reports on one case only of hemorrhage of the lungs treated by intravenous injections of coagulen. The case of Riedl was that of a hemophilic who had severe pulmonary hemorrhages. In all three cases the hemorrhages, which were occurring nearly every day, were checked after its use and did not recur within six weeks after the injection. Of course, little significance can be attached to clinical cases observed singly, especially when, as in the present case, the probability of any connection between the remedy and the results attributed to it is discounted by animal experiment.

These three clinicians noted no bad general effects following the intravenous injection of coagulen, nor have any cases of thrombosis or embolism been reported. Fonio himself, however, has noted a kind of collapse effect following the use of coagulen on animals. It is this fact which has deterred Albrecht from making use of coagulen intravenously. He found that it had little effect on arterial or venous hemor-

rhages because the coagula produced by the coagulen are washed away by the oncoming blood.

A description of coagulen appeared in THE JOURNAL, Sept. 25, 1915, p. 1111.

Below is a list of the more accessible papers and reports on coagulen that have appeared during the last two years:

Fonio, A.: Cor.-Bl. f. schweiz. Aerzte, 1913, Nos. 13, 14, 15.
Obermüller, H.: München. med. Wchnschr., 1913, No. 51, p. 2832.
Kausch, W.: Deutsch. med. Wchnschr., 1914, No. 15, p. 754.
Fonio, A.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, xxvii, 642.
Juliusburger, E.: Deutsch. med. Wchnschr., 1914, xl, 1668.
Barth, E.: Deutsch. med. Wchnschr., 1914, xl, 1573.
Riedl, H.: Wien. klin. Wchnschr., 1915, xxviii, 7.
Mutschenbacher, T. von: Budapesti Orvosi Ujsag, 1914, No. 25, p. 231.
Mutschenbacher, T. von: Deutsch. med. Wchnschr., 1914, xl, 1669.
Vogt, E.: Deutsch. med. Wchnschr., 1914, No. 26, p. 1315.
Tarnowsky, G. de: Surg., Gynec. and Obst., May, 1914, p. 641.
Hotz, G.: Deutsch. med. Wchnschr., 1914, No. 29, p. 1475.
Albrecht, H.: Zentralbl. f. Gynäk., 1914, xxxviii, 1185.

INCOMPATIBILITY OF QUININ WITH ASPIRIN AND OTHER ORGANIC ACIDS

To the Editor:—In the *Bulletin of Pharmacy* for November is an article relative to the incompatibility of aspirin and quinin, and the report of a death supposed to have been caused by this combination. What is your opinion on this question?

A. P. STANDARD, M.D., Macomb, Ill.

To the Editor:—My attention has recently been called to the possibilities of the formation of a poisonous compound, when aspirin and quinin are administered together, or near each other. I have been informed that there have been a few fatalities, and a number of nearly fatal cases resulting from this combination. If such is possible, I would be glad to have more information in regard to the matter, and believe there are others who would be very glad to learn this through THE JOURNAL, rather than by the personal experience of having a patient die from such a combination. H. F. T., Iowa.

ANSWER.—It has been known for a number of years that, by long-continued heating with glacial acetic acid or by fusion of the alkaloidal salts, some of the cinchona alkaloids may be converted into isomeric products which possess extremely poisonous properties. Experiments have also shown that, by acting as catalyzers, slightly dissociated acids, such as acetylsalicylic (aspirin), citric, malic, acetic or tartaric acid, under the influence of heat may convert quinin into its poisonous isomer, quinotoxin, and cinchonin into cinchotoxin. At the temperatures of from 98 to 102 C. (208.4 to 215.6 F.) the conversion is practically quantitative; at 37 C. (98.6 F.—normal body temperature) the reaction goes on much more slowly, amounting to about 2 per cent. in forty-eight hours. The danger of poisoning through conversion of quinin into quinotoxin in the body cannot be great, but it is well to keep the possibility in mind. The formation of a dangerous amount of the poisonous product would probably be greatly favored if the mixture—quinin and aspirin, for instance—had been made up for some time. Suspensions of the alkaloid in flavored syrups, with organic acids, etc., might be regarded with suspicion; likewise elixirs such as iron, quinin and strychnin, which usually contain citrates or tartrates. The foregoing applies especially to the alkaloid and to such salts as quinin tannate. Since conversion into the toxic isomer does not take place appreciably with an excess of strong mineral acid, there could be but little danger from the administration of the mineral acid alkaloidal salts, such as quinin sulphate.

The subject has not been studied sufficiently to make it possible to decide, in each case of supposed quinin poisoning, whether the toxic symptoms were due to overdose, to idiosyncrasy or to formation of quinotoxin or cinchotoxin in mixtures administered.

HARRISON NARCOTIC LAW AND THE DELIVERY OF DRUGS

To the Editor:—Would it be a violation of the Harrison law for a druggist to fill a prescription that I give him for a patient of mine and send it to the patient by mail, R. F. D.? Every farmer in this county gets his mail by rural route, and frequently it is a great convenience to send medicine by mail. It saves them a trip to town.

R. D. Z.

ANSWER.—The Harrison Narcotic Law makes no provisions regarding the manner in which the drug shall be delivered to the patient by the druggist. After the druggist has filled the prescription, he may deliver it to the patient in person, by messenger, by mail or by express. The object of the law is to secure a written record of every transaction involving the drugs covered by the law.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 11, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

INDIANA: Indianapolis, Jan. 11, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

MINNESOTA: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

NEW HAMPSHIRE: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

NEW MEXICO: Santa Fé, Jan. 10, 1916. Sec., Dr. W. E. Kaser, East Las Vegas.

NORTH DAKOTA: Grand Forks, Jan. 4-7, 1916. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 18-20, 1916. Sec., Dr. Nathan C. Schaeffer, Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

SOUTH DAKOTA: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Wauhay.

UTAH: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WASHINGTON: Walla Walla, Jan. 4, 1916. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

New Jersey June Report

Dr. H. G. Norton, secretary of the New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, June 15-16, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 40, of whom 35 passed and 5 failed. Forty-six candidates were licensed through indorsement. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1913)	84.3
Howard University	(1914)	75, 75.3
College of Phys. and Surgs., Baltimore	(1890) 78.7; (1911)	79.3
Johns Hopkins University	(1914)	80.2
University of Maryland	(1914)	75.2
Albany Medical College	(1914)	78.8
Columbia University, Coll. of Phys. and Surgs.	(1915)	80.4
Long Island College Hospital	(1881) 77.1; (1912)	78.7
New York Homeo. Med. Coll. and Flower Hosp.	(1913) 78.7; (1915) 79.4	
University and Bellevue Hospital Medical College	(1915)	83, 84.4
Hahnemann Medical College and Hosp., Philadelphia	(1915)	78.1
Jefferson Medical College	(1914) 75.9, 77.4, 81; (1915) 77.1, 77.5, 78.3, 81.7, 82, 83.	
Medico-Chirurgical College of Philadelphia	(1915)	83.6
Univ. of Pennsylvania	(1914) 82, 83.7, 84.1; (1915) 80.3, 83.7,	84.3
Woman's Medical Coll. of Pennsylvania	(1914) 88.2; (1915)	82
University of Wurzburg	(1870)	77.3

FAILED

College	Year Grad.	Per Cent.
Howard University	(1907)	67.7
Fordham University	(1913)	72.8
University of Naples	(1893) 59.8; (1895) 64.5; (1912)	73.6

LICENSED THROUGH INDORSEMENT

College	Year Grad.	Total No. Licensed
Columbian University	(1902)	1
Howard University	(1907)	1
Baltimore Medical College	(1903) (1911)	2
College of Phys. and Surgs., Baltimore	(1911) (1912)	2
University of Maryland	(1912)	1
Boston University	(1908)	1
Dartmouth Medical School	(1913)	1
Albany Medical College	(1913)	1
Columbia University, Coll. of Physicians and Surgeons	(1904) (1910) (1913, 2) (1914)	5
Cornell University	(1913)	1
Fordham University	(1909)	1
Long Island College Hospital	(1898) (1899) (1913) (1914)	4
New York Homeo. Medical College and Flower Hosp.	(1901) (1914, 2)	3
University and Bellevue Hospital Medical College	(1914)	4
University of Buffalo	(1908)	1
Starling-Ohio Medical College	(1908)	1
Hahnemann Medical College and Hospital, Phila.	(1899)	1

Jefferson Medical College	(1913) (1914)	2
Medico-Chirurgical Coll. of Phila	(1903) (1905) (1913, 2)	4
University of Pennsylvania	(1900) (1909) (1911, 2)	4
University of Vermont	(1912, 2) (1913)	3
University of Naples	(1893)	1
University of Rome	(1910)	1

Iowa June Report

Dr. G. H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, June 10-12, 1915. The total number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 57, of whom 56 passed and 1 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Alabama	(1910)	90.5
Chicago College of Med. and Surg.	(1915) 83.5, 86.5, 88.6, 91,	96.6
Northwestern University	(1901) 91.1; (1911) 88; (1915) 90.5,	92
Rush Med. Coll.	(1905) 89; (1907) 92.2; (1910) 91.9; (1911)	91.9
University of Illinois	(1915) 90.6, 92.5,	91.7
Indiana University	(1911)	83.2
Keokuk Medical College, Coll. Phys. and Surgs.	(1900)	86.7,
State University of Iowa, College of Medicine	(1915) 82.5, 86.6, 86.7, 87.2, 88, 91.6, 91.7, 91.7, 92.1, 92.2, 92.2, 92.5, 92.5, 93, 93, 93.5, 94.9, 95.4, 95.8, 96.6, 96.7,	93.5
State University of Iowa, College of Homeo. Med.	(1915)	90, 92
Hospital College of Medicine, Louisville	(1906)	78.6
Johns Hopkins University	(1915)	90.2
Harvard University	(1913) 86.6,	89.1
Tufts College Medical School	(1912)	90.4
St. Louis College of Physicians and Surgeons	(1906)	77
St. Louis University	(1915)	88.9, 90.9
John A. Creighton Medical School	(1915)	86
Jefferson Medical College	(1914)	93.5
College of Physicians and Surgeons, Memphis	(1910)	91
Queens University	(1914)	91

FAILED

Meharry Medical College	(1909)	66.9

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago	(1893)	Nevada
Hahnemann Medical College and Hospital, Chicago	(1912)	Nebraska
Northwestern University	(1905)	Kansas
Kansas Medical College	(1911)	Kansas
University of Louisville	(1908)	Nebraska
College of Physicians and Surgeons, Baltimore	(1895)	Penna.
Grand Rapids Medical College	(1907)	Nebraska
St. Louis College of Physicians and Surgeons	(1907)	Missouri
St. Louis University	(1914)	Missouri
University Medical College, Kansas City	(1904)	Kansas
John A. Creighton Medical College	(1910, 2) (1911)	Nebraska
Starling Ohio Medical College	(1908)	Ohio
Wisconsin College of Physicians and Surgeons	(1909)	Wisconsin

Tennessee June Report

Dr. A. B. DeLoach, secretary of the Tennessee State Board of Medical Examiners, reports the written examination held at Knoxville, Memphis and Nashville, June 25-26, 1915. The total number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 105, of whom 101 passed, including 12 nongraduates, and 4 failed, including 2 nongraduates. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	76
Atlanta Medical College	(1915)	83
Southern College of Medicine and Surgery	(1913)	75.2
Bennett Medical College	(1915)	80.6
Chicago Hospital College of Medicine	(1915) 80.6,	82
Reliance Medical College	(1911)	75
Rush Medical College	(1914)	90.7
Hospital College of Medicine, Louisville	(1900)	79.2
University of Louisville	(1912) 87.1; (1915)	86
Tulane University of Louisiana	(1908)	79.9
Mississippi Medical College	(1911)	76.4
American Medical College	(1910)	77.2
Barnes Medical College	(1904)	80.5
Eclectic Medical University, Kansas City	(1915)	87.6
Homeopathic Medical College of Missouri	(1903)	79.5
St. Louis College of Physicians and Surgeons	(1915) 75,	76.6
Columbia University, College of Phys. and Surgs.	(1912)	88
Eclectic Medical College, Cincinnati	(1898) 75; (1910)	81.2
Miami Medical College	(1898)	75
University of Pennsylvania	(1912)	92.2
Lincoln Memorial University	(1913) 78; (1914) 75, 78, 78.5, 79, 79; (1915) 80, 83.5, 85, 92.	
Memphis Hospital Medical College	(1903) 81.5; (1913)	75
Meharry Medical College	(1911) 76.2; (1914) 75, 81.5, 82, 83.2; (1915) 75, 76.5, 78, 79, 79.6, 80.6, 81, 82.2, 83.4, 83.7, 84, 84,	84.5
University of Nashville	(1907)	83.8
University of Tennessee	(1914) 83, 83.5; (1915) 80, 85.1,	85.1
Univ. of West Tennessee	(1914) 75, 75, 80, 82.7, 85; (1915)	82.2
Vanderbilt University	(1910) 79; (1912) 83.9; (1913) 89.2 (1914) 86; (1915) 77.1, 81, 81.2, 82, 82, 82.1, 82.6, 83, 83, 83.5, 84.2, 84.5, 84.8, 85, 85, 86.1, 86.9, 87.7, 89.3.	
Nongraduates	75, 75, 75, 75, 75, 75.6, 75.7, 80, 80.6, 83.4, 83.5, 84.9	

FAILED

Lincoln Memorial University	(1914)	59
University of Tennessee	(1912)	*
Nongraduates		57, 63

* Withdrew from the examination.

Wisconsin June-July Report

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports the practical and written examination held at Milwaukee, June 29-30—July 1, 1915. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 68, of whom 61 passed and 7 failed, including 1 osteopath. Twenty-eight candidates, including 2 osteopaths, were licensed through reciprocity. One candidate was granted a reregistration license. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1915) 75,	79
Chicago College of Med. and Surg.	(1915) 75, 77, 80, 82,	82, 87
Rush Medical College	(1915)	86, 88
University of Illinois	(1914) 85, 86, 86; (1915) 79, 80,	84, 88
St. Louis University	(1915)	89
University of Pennsylvania	(1913) 86; (1914)	84
Marquette University	(1915) 75, 78, 79, 79, 79, 79, 79, 79, 80, 80, 80, 80, 81, 81, 82, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 86, 89, 89,	89

FAILED

Chicago College of Med. and Surg.	(1914) 60, 66; (1915)	72, 72
Marquette University	(1913)	66
Montreal School of Med. and Surg.	(1912)	71

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.	(1907) (1913)	Illinois
College of P. and S., Chicago	(1902) Illinois; (1910)	Iowa
Hahnemann Medical Coll. and Hosp., Chicago	(1913)	Illinois
Northwestern University	(1910) (1912, 2) (1913) Illinois; (1914, 2)	Missouri
Rush Medical College	(1893)	Illinois
University of Illinois	(1911) (1914)	Illinois
University of Michigan Medical School	(1905)	Michigan
University of Minnesota	(1905) (1913)	Minnesota
Central Medical Coll., St. Joseph	(1898)	Idaho
Ensworth Medical College	(1908)	Wyoming
Pulte Medical College	(1888)	Michigan
Western Reserve University	(1912)	Ohio
University of Pennsylvania	(1907)	Penna.
College of P. and S., Memphis	(1911)	Tennessee
University of Texas	(1898)	Texas
Milwaukee Medical College	(1912)	Illinois
University of Christiania	(1912)	Minnesota

West Virginia July Report

Dr. S. L. Jepson, commissioner of health of the Public Health Council of West Virginia, reports the oral, practical and written examination held at Parkersburg, July 7-9, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 80. The total number of candidates examined was 46, of whom 43 passed and 3 failed. One candidate was granted a reregistration license. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1915)	84.2
College of Physicians and Surgeons, Los Angeles	(1914)	83.6
Atlanta Medical College	(1915)	85.4
Bennett Medical College	(1915)	80.1
Chicago College of Medicine and Surgery	(1915) 81.2, 81.8, 83, 84.6, 85.2, 86.4, 89.1.	
University of Louisville	(1914) 81.7, 89.3; (1915)	86.6
College of Phys. and Surgs., Baltimore	(1915) 82.3, 82.6, 83.7, 85.5, 85.8, 86.1, 87.3, 88.5, 90.1, 91.8.	
Johns Hopkins University	(1915)	87.5
Maryland Medical College	(1912)	80
University of Maryland	(1915) 86.4,	87.4
Boston University	(1915)	86.9
Ohio State Univ., College of Medicine	(1915) 88, 92.5,	92.8
Jefferson Medical College	(1915)	87.2
Medico-Chirurgical College of Phila.	(1914)	89.5
University of Pennsylvania	(1914)	85.6
University of Pittsburgh	(1914)	86.7
Woman's Medical College of Penn.	(1913)	84.9
Meharry Medical College	(1915) 83.3,	88.3
Medical College of Virginia	(1914) 82.8; (1915) 87.5,	89.3
University of Virginia	(1911)	89.3

FAILED

Bennett Medical College	(1915)	72.5
Medical College of Virginia	(1915) 78.6,	78.7

Miscellany

America and the World's Supply of Cinchona Bark

That the cinchona tree is indigenous to South America is well known. It is not so well known that within the lifetime of persons yet living the American continent has ceased to be a considerable factor in the world's supply of cinchona. This fact is brought home to us today by the present high price of quinin (editorial, THE JOURNAL, Dec. 4, 1915, p. 2010).

There are many species of cinchona, a number of which yield varying amounts of alkaloids, while others are of little or no value. Commercial cinchona bark today, however, consists chiefly of red cinchona, yielded by *Cinchona succirubra*, and yellow cinchona or Calisaya bark, yielded by *C. calisaya* and *C. ledgeriana*. These two barks are described in the U. S. Pharmacopeia.

All the species of cinchona are natives of the Andean regions of South America between latitude 19 south and 10 north. They have never been found native elsewhere, though some parts of Mexico are said to be well adapted to their growth (Markam, C. R.: Peruvian Bark). For a long time the bark was collected only from the region around Loxa or Loja, Ecuador, whence came the famous bark that cured the Countess of Chinchon. Later, forests were discovered elsewhere and worked out with ruthless waste. Prospectors, it seems, sought new cinchona regions as they would have searched for gold, and having found a forest, exhausted it without thought for the morrow. The *cascarilleros* (bark collectors) gathered the bark either by stripping the tree as it stood, or by felling it and then stripping it; new trees were never planted to take the place of those destroyed. In 1735, Ulloa reported to the Spanish government that these wasteful practices would undoubtedly exterminate the forests about Loja in time. He suggested that the Corregidor of Loja should appoint an overseer of the forests whose duty it should be to see that a cinchona tree was planted in place of each one cut down. This salutary rule, however, was not enforced; and sixty years later Humboldt reported that 25,000 trees were felled in a single year. Sir Clements Markham, who saw the forests in the middle of the last century, believed that they were not likely to become actually exterminated unless the method of stripping the standing tree was followed exclusively. This left the tree to be destroyed by rot and insects. If it were felled very near the ground, sprouts would be sent up to take its place. The more probable danger, Markham thought, was that of periods of scarcity during the time while young forests were growing up. Nevertheless, Wellcome ("The Cinchona Forests of South America," *Popular Science Monthly*, August 1880, p. 507), who visited the cinchona regions after Markham's time (in 1879), was very pessimistic as to their future. It is said that when the South American countries, especially Bolivia, desired to undertake the cultivation of cinchona, they sent abroad to secure seeds from the foreign plantations that were by that time flourishing (National Standard Dispensatory, article on cinchona, p. 448).

It seems probable that the high prices of quinin during the Civil War were due largely to actual scarcity of cinchona bark, and possibly in some degree to interference by the South American governments with the bark export trade. At all events, the world would probably have been suffering long since from a quinin famine if it had not been for the cultivation of cinchona outside of South America. Various men of different nationalities had suggested or attempted its domestication, but the achievement was difficult, for, apart from the natural obstacles in the way, the jealous South Americans hindered the exportation of seeds and plants as much as possible. The thrifty Dutch, though not actually the first to attempt the transportation of specimens, were apparently the first to succeed in taking them safely to the Old World. In 1853 the Dutch government commissioned the botanist Hasskarl to collect cinchona plants and seeds for use in starting plantations in Java. In 1866 the Dutch obtained from Charles Ledger, an Englishman long resident in South America, half of his collection of seeds of the valuable species since called after him *Cinchona ledgeriana*. Collections for the cinchona plantations in India were made by Clements Markham in 1860, while half of Ledger's collection was purchased in 1866 by an Indian planter. Both in India and in Java the cultivation of cinchona has proved a success, and the richness of the bark in alkaloids has been increased under cultivation and by selection of stock. The U. S. pharmacopeial requirement is for not less than 5 per cent. of total alkaloids, but good bark may yield a much higher percentage. The effort of growers in late years has been to raise the quinin content rather than that of total alkaloids (Dispensatory of the U. S. A., article on cinchona rubra, p. 344).

India is said to consume all or practically all the cinchona raised in that country (Roeder, George: Tropenpflanzen, 1909, xiii, 473; quoted in Digest of Comments on the Pharmacopeia). The bulk of the world's supply of cinchona now appears to come from Java (Kraemer, Henry: Scientific and Applied Pharmacognosy, 1915, p. 738), though a comparatively small amount is still imported from South America, and some is now produced in Ceylon and Africa. The South American plantations are said to have proved unsuccessful commercially, largely because the expense of transportation (on the backs of men over the mountains) makes competition with eastern cinchona impossible (National Standard Dispensatory, article on cinchona, p. 448). The cinchona planter of Java inclines to take advantage of the market, which he now practically controls, and the rise in the price of quinin, which, as mentioned earlier, began before the present war, may be due in some degree to this circumstance.

An Examination of Prisoners at Joliet Penitentiary

A preliminary report of a psychologic and psychiatric study of prisoners at Joliet Penitentiary, made by Drs. H. Douglas Singer and George Ordahl, appears in the *Institution Quarterly*. Under present conditions, all convicts at the penitentiary are treated alike and associate with each other at haphazard. It was realized that, if the institution were to fulfil its true purpose, that of protecting society, those persons capable of improvement should be singled out, kept segregated from the hopelessly antisocial convicts, and educated for a return to normal social life. While this purpose cannot be completely realized without universal application of the indeterminate sentence, it was felt that something could be accomplished under the present system.

It was impossible, in the time available, to examine all of the inmates of the penitentiary. Fifty male prisoners were therefore chosen, in a manner intended to secure four representations of different types, for study by Drs. Singer and Ordahl. Fifty-one of the fifty-two female prisoners were studied by Mrs. George Ordahl.

The actual ages of the male prisoners ranged from 16 to 74; the average was 30. The mental ages by the Binet-Simon tests ranged from 6 to 16; the average mental age of the entire number was 11.2. Only seventeen prisoners tested above 12 years; fourteen were found to be feebleminded (below 10 years). The actual ages of the female prisoners ranged from 19 to 60; the average was 34. The mental ages by the Binet-Simon test ranged from 7 to 15; the average was 11.8. Fifteen of the female prisoners responded to the tests above the age of 12; five were feebleminded, or below 10 years.

The investigators also grouped the prisoners in accordance with their fitness to become members of society as: (1) criminals by accident, of adult and subnormal intelligence; (2) borderline cases; (3) antisocial persons, of adult or subnormal intelligence, and (4) insane persons. 1. The group of criminals by accident (those capable, if normal in intelligence, of being educated for return to a useful and self-supporting life in society) included 16 normally intelligent and 15 feebleminded males, and 16 normally intelligent and 5 feebleminded females. 2. The borderline group (persons apparently capable of improvement in spite of the presence

of certain ominous traits) consisted of 6 males and 27 females. 3. The group of persons regarded as absolutely unfit by Nature for life in society or commingling with the more hopeful prisoners included 13 males and 1 female. 4. While the insane group is necessarily small, one case was studied in which crime was judged to be the result of definite delusions still present and active after detention for one year.

The report emphasizes certain points which require remedy: 1. The information concerning convicts available for the use of the board of pardons is so scanty and unsatisfactory that some prisoners are released when entirely unready for freedom and thus are given an opportunity to committe fresh crime, while other prisoners deserving of probation and liable to be harmed by prison conditions are detained. 2. The selection of occupation for convicts seems to be based more on the needs of the prison departments than on the requirements of the individual to be trained. 3. Recidivism, while most frequent among antisocial persons, is not limited to them. It is especially emphasized that antisocial persons should be recognized, segregated to prevent their influence on persons capable of improvement, and, if their sentence permits of their detention, should not be permitted to leave.

Book Notices

PRINCIPLES OF GENERAL PHYSIOLOGY. By William Maddock Bayliss, M.A., D.Sc., F.R.S., Professor of General Physiology in University College, London. Cloth. Price, $6 net. Pp. 850, with 259 illustrations. New York: Longmans, Green & Co., 1915.

According to the author, this book is not an applied physiology, but rather an abstract physiology, presenting facts not found except in original papers or monographs, many of them not biologic, the knowledge of which is of fundamental importance in understanding the mechanism of living protoplasm.

The book is both general and elementary, in that it discusses the importance of the following phenomena in an elementary and general way, each of the subjects given comprising a chapter in the book: protoplasm; energetics; surface action; colloidal state; permeability of membranes and the properties of the surface of cells; osmotic pressure; electrolytes and their action; water, its properties and functions; catalysis and enzymes; oxidation and reduction; tonus; electrical changes in tissues; excitation and inhibition; contractile tissues; receptor organs and action of light. This type of subject-matter receives only scant treatment or passing reference in most books. The remaining chapters deal with subjects more commonly and extensively treated in the usual texts, such as nutrition; secretion; digestion; reflex action; nervous system, peripheral and central; respiration and the circulation of the blood. The book ends with a chapter on hormones, drugs and toxins in which small, entirely inadequate paragraph references are made to the highly important glands of internal secretion. Each chapter ends with a summary followed by references to important literature. Besides the usual illustrations, there are scattered appropriately throughout the text portraits of the men whose striking discoveries have been of such fundamental importance in advancing physiology and its allied sciences, as Claude Bernard, Descartes, Emil Fischer, Graham, van't Hoff, Leeuwenhoek, Priestley, Ludwig, Ostwald, Ehrlich, Lavoisier, Pfeffer, Helmholtz, Pawlow and Harvey. This feature will please all who love the biologic sciences and who, therefore, take a personal interest in the men associated with their history and development.

The book might be recommended most highly for no other reason than that there is no book in the English language which contains a similar extensive and scholarly discussion of those processes, mentioned by title above, references to which are being made more and more at the present day, because their combined manifestation in a physical and chemical system constitutes, perhaps, life and living phenomena. Should the text appear at times to be a loose compilation of data, every biologist will, nevertheless, be grateful to the author for the facts and the splendid bibliography made instantly accessible to him for his own further study and particular problems. The aim of the book was high and the task was difficult; the result is so gratifying that any deficiencies appear negligible when the work is viewed as a whole.

DISEASES OF THE NOSE AND THROAT. By Algernon Coolidge, A.B., M.D., Professor of Laryngology in Harvard Medical School. Cloth. Price, $1.50 net. Pp. 360, with illustrations. Philadelphia: W. B. Saunders Company, 1915.

This is a small volume into which the author has attempted to compress the established facts and authenticated theories regarding the methods of examination, and the anatomy and physiology, of the nose, external and internal, and the pharynx and larynx, together with the etiology, pathology, symptoms, signs, diagnosis and treatment of the long list of diseases to which these parts are liable. He also includes chapters on diseases of the mouth and tongue, on diphtheria, scarlet fever, measles, etc., and on bronchoscopy and esophagoscopy. He appears to have attempted a little too much for the space occupied. The book is intended as a manual for students and practitioners, and its brevity is one of its chief virtues. As the author remarks, there are many things that can be learned only by clinical experience, but also much that is overlooked if this practical work is not accompanied by a reasonable amount of didactic study. On this ground the book is of special value for undergraduates, because they have so little time in which to master the enormous volume of medical science with which they are expected to be familiar when turned out as full-fledged practitioners. It would be much better if, aside from the fundamental sciences, the whole subject of medicine were taught from brief textbooks which should contain the essential facts. This method should be combined with personal education of all the senses, and didactic and clinical instruction by competent teachers. On this account we can specially commend this work to undergraduates, for it contains as much information on these subjects as they will be able to grasp and assimilate.

CHEMICAL CONSTITUTION AND PHYSIOLOGICAL ACTION. By Prof. Dr. Leopold Spiegel. Translated with Additions from the German by C. Luedeking, Ph.D., and A. C. Boylston, A.M. Cloth. Price, $1.25 net. Pp. 155. New York: D. Van Nostrand Company, 1915.

Those who do not yet appreciate that our knowledge of the effects of chemical agents on animal organisms is no longer, as it was primitively, largely a matter of mere haphazard discovery, will find in this little volume much fascinating instruction. Our knowledge, not only of the influence of the nucleus of structure of an organic compound on its physiologic action, but also of the influence of constitution, that is, the nature and number of the constituent radicals and the grouping of these radicals, is increasing. There is also a collection of data which furnishes us with an insight into the relation between the physiologic action of an inorganic compound and its component ions. This knowledge, considered in connection with what is known about the composition and dynamics of cell substance and also, at times, in connection with certain physicochemical phenomena, enables us to predict with fair assurance the pharmacologic action of many compounds of which we know the structure. From this account of the subject-matter of this work, it may readily be surmised that such knowledge has been utilized by experimental therapeutists and seized on by inventors of chemical therapeutic agents, but it also seems obvious that, before therapy can have become thoroughly rationalized, such knowledge must also become a part of the equipment of a prescribing physician. While a treatise on this phase of medical science is hardly a novelty, this volume is welcomed, because the scope and manner of treatment of the subject-matter makes it of especial service as an introduction to the subject for those who have not yet become conversant with it, or for those whose acquaintance with it is not comprehensive. It is all easily intelligible to any one with the average present-day medical student's knowledge of chemistry.

Medicolegal

Covenant Against Use of Property for "Business" Not Violated by Physicians

(Iselin et al. vs. Flynn (N. Y.), 154 N. Y. Supp. 133)

The Supreme Court of New York, Special Term, New York County, says that when certain lots were sold each deed contained a covenant that whenever the lot should be built on there should be erected a first-class dwelling house of specified materials and dimensions, and that there should not be established or carried on certain enumerated uses, "or any kind of manufactory, trade or business whatsoever, . . . and that the building and buildings erected on said lots shall be restricted to private dwellings." A number of physicians eminent in their profession took up residence in the street, and it was claimed that they in fact conducted business which had consequential effects on the neighborhood. But it was not necessary to enter on an ethical discussion of the difference between a livelihood gained by the practice of a profession and that by a business vocation. The law is practical. It is not concerned with abstractions, but with the actual affairs of men, and it recognizes the distinction between the practice of a profession and the conduct of a mercantile business. One is purely personal, depending on the skill or art of the individual. The other may consist in ability to organize and manage a shop or exchange where commodities are bought or sold. Neither the spirit nor the letter of the restrictive covenant in this case intended or expressed prohibition of the practice of a profession, nor can sophistry pervert the real intent and plain meaning of the word "business" to include "profession."

Osteopaths Not Authorized to Practice Medicine

(State vs. Dodd (Mont.), 149 Pac. R. 481)

The Supreme Court of Montana affirms an order denying the defendant a new trial after his conviction of practicing medicine without having first obtained a certificate from the State Board of Medical Examiners. The court says that the principal contention made was that the statute regulating the practice of medicine in Montana is unconstitutional. Section 1591 provides that every person practicing medicine or surgery without such certificate shall be guilty of a misdemeanor, defines "practicing medicine or surgery," and contains this proviso: "Nothing in this section shall be construed to restrain or restrict any legally licensed osteopath practitioner . . . under the laws of this state." It was insisted that the effect of this section, with the proviso quoted, is to deny to every person, except osteopaths, the right to practice medicine or surgery in Montana without a certificate from the State Board of Medical Examiners, and that, in excepting licensed osteopaths from the operation of its provisions, those persons thus favored are free to engage in the practice of medicine or surgery without having to submit to the ordeal of an examination and without having the certificate required of every other one who seeks to engage in the like practice. But, in assuming that Section 1591 permits an osteopath to practice medicine without a certificate from the State Board of Medical Examiners, counsel for the defendant erred, and with the fall of this, his fundamental premise, went his entire argument. When the proviso was inserted in what is now Section 1591, the legislature understood that the practice of osteopathy (a) did not comprehend the practice of medicine or surgery, and (b) that it was already regulated and controlled by appropriate statutes enacted pursuant to the police power of the state. The only effect, then, of this legislation, has been to classify all those engaged in the healing art into two classes: (1) Physicians and surgeons, or those engaged in the practice of medicine or surgery; and (2) osteopaths, or those devoted to the practice by osteopathy. In the absence of anything appearing to the contrary on the face of the statute, the classification made by the legislature will be presumed reasonable. Nor was there any suggestion in this case that such a classification as was undertaken above is unreasonable. The proviso in Section 1591 is a harmless piece of legislation. It did not affect the status of osteopathic practitioners in the least. They were confined thereafter, as theretofore, to the practice of osteopathy and forbidden to practice medicine or surgery without the certificate from the State Board of Medical Examiners required of every one who seeks to engage in such practice. Neither has the legislature, by enacting Section 1605 of the Revised Statutes, recognized osteopathy as including, or included within, the practice of medicine. That section does not authorize an osteopath to "treat, cure, alleviate any disease of the mind or body by any treatment," as counsel for the defendant contended in his brief. The language of the section cannot be tortured to convey such meaning. Within the entire scope of his practice, the osteopath is confined to treatment by the use of the hands or mechanical appliances.

Liability of Relatives for Medical Services and Hospital Care

(Tryon vs. Town of Moyer et al. (Minn.), 153 N. W. R. 307)

The Supreme Court of Minnesota reverses orders sustaining the demurrers of Defendant Ernest Dornfeld to the complaint of the plaintiff in this case and to the complaint of the Benson Hospital Association in a case decided with this one. The court says that this was an action for the reasonable value of medical and surgical services rendered by the plaintiff to one Rosie Dornfeld, a granddaughter of Ernest Dornfeld, and the other case was for services and care rendered to her by the association in its hospital. It was stated that Rosie Dornfeld had been seriously injured, and that she and her parents were public charges on the town of Moyer, but that her grandfather was able, financially, to respond for the expenses of her care and attendance, but refused to pay therefor. The question presented by the record was whether one who has furnished to a dependent relative medical care and treatment or hospital care and services in an emergency case, where there is an urgent requirement for both physician's services and hospital care, imperative and admitting of no delay, can recover from a relative, on whom rests the statutory duty to support such dependent relative, compensation for the reasonable value of such services, even though such services were rendered without the knowledge of the relative sought to be charged. The court holds that he may. The Minnesota statute provides that every poor person who for any reason is unable to earn a livelihood, shall be supported by his children, parents, brothers and sisters, grandchildren or grandparents; and relatives having sufficient ability shall be called on for such support in the order above named, etc. The duty is created by the statute, and does not depend on contract. It is a duty which devolves primarily on the relatives; it cannot be evaded or shifted on others. Cases may arise in which notice to the relative may be required, but the court was not dealing with such a case. It sufficiently appeared from the complaint that Rosie Dornfeld was very seriously injured; that she required the promptest attention; that it was imperatively necessary to operate immediately in order to save the child's life. It appeared that everything was done for the child that could have been done by Defendant Dornfeld himself, and that the services rendered were reasonably proper and necessary. Under these circumstances, it could not be successfully contended that the duty rested on the plaintiffs to give notice to the defendant Dornfeld before doing that which it was imperatively necessary should be done in order to save the child's life. There was a legal duty on the part of the Defendant Dornfeld to support and care for his granddaughter. An emergency arose. The necessity for medical, surgical and hospital services was immediate, urgent and imperative. The plaintiffs having performed the services, it followed that the defendant Dornfeld was primarily liable to pay for the reasonable value of such services, at least until such time as he himself could act in the premises. The complaint in both cases stated a cause of action against the defendant Dornfeld.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

PHILADELPHIA PEDIATRIC SOCIETY, SECTION ON PEDIATRICS OF THE NEW YORK ACADEMY OF MEDICINE, AND THE NEW ENGLAND PEDIATRIC SOCIETY

Joint Meeting, held at Philadelphia, Nov. 9, 1915

DR. WILLIAM N. BRADLEY, Philadelphia, in the Chair

Lobar Pneumonia: The Correlation of Its Symptoms and Physical Signs with the Findings of the Roentgen Ray

DR. HOWARD H. MASON, New York: During the past two years, at least one roentgenogram has been taken in each case of lobar pneumonia on the children's service at the Presbyterian Hospital. In those cases showing a shadow, but in which bronchial voice and breathing were not heard, roentgenograms were made at varying intervals. The purpose of these examinations was to ascertain whether or not the consolidation as evidenced by this shadow passes through any regular development, and if so, whether the different stages of its progress can be correlated with the development of certain physical signs. Thirty-seven cases of lobar pneumonia were studied. Each case showed a definite shadow. The shadow was always so placed that it touched the pleura at some point. The early shadows were triangular, with their bases on the pleura and their apices separated from the region of the root by normal lung. In their later development the shadows extended in size and became uniform from the periphery to the root of the lung. When the shadow involved this entire stretch, bronchial voice and breathing were present, but not otherwise. It is believed that the inference is justified that the dimensions of the shadows correspond to the extension of consolidation.

Tuberculosis in Infancy

DR. CHARLES HUNTER DUNN, Boston: The importance of tuberculosis as a cause of death in the first two years of life is shown by the fact that in a series of sixty-two successive necropsies, tuberculosis was found in twenty-five, was considered the direct cause in twenty-three cases and the contributing cause in the other two. Extremely divergent views are held concerning the source of infection and its portal of entry into the body. One set of writers believes that milk infected with the bovine type of bacillus is the most common cause of the disease in infancy, and the intestinal tract or the tonsils the most common portal of entry. Other writers believe the human type of bacillus to be the most common cause, and the lungs the portal of entry. The two most important forms of evidence bearing on this question are (1) that derived from bacteriologic study of bacilli obtained from infants by culture or animal inoculation, and (2) that derived from a careful study of the lesions found postmortem. Postmortem findings show a greater frequency of involvement of the peribronchial and mediastinal lymph nodes than of the mesenteric. Advocates of milk infection try to explain this on the theory that the bovine bacillus can pass through the intestinal mucous membrane and through the mesenteric lymph nodes without causing a lesion, locating in the lymph nodes of the chest as the point of minimum resistance. This theory I believe to be untenable. The contradictory evidence on the source of infection and portal of entry can be explained only on the ground of a variation according to locality. Such variation is probably largely dependent on the character of milk supplies and the frequency of tuberculous disease in cattle in various parts of the world. I believe that infants can be infected either with human bacilli, usually entering through the lungs, or with bovine bacilli, usually entering through the intestine. The most generally accepted view is that tuberculous infection shows the primary lesion in the lymph nodes. In my studies at the Infants' Hospital, a primary incision was actually found at the portal of entry in twenty-two of the twenty-five postmortems. I have inclined, therefore, to believe Ghon that it is more probable that when a primary lesion is not found at the portal of entry it is overlooked. The primary lesion was found in the lung in twenty cases, and in the intestine in two. Adding to the twenty cases, the three in which the only chronic lesions were found in bronchial lymph nodes, we have a ratio of twenty-three cases of infection through the lung to two cases of infection through the intestine. Tuberculous ulceration of the intestinal mucous membrane was found in seven cases besides the two in which the lesion was considered primary. I believe it to be a probable conclusion that these tuberculous ulcerations of the intestines are secondary to swallowed tuberculous material coughed up from the softening of the primary lesion. These seven cases with secondary tuberculous ulceration of the intestine were identical with the seven cases in which the mesenteric lymph nodes were involved in addition to the bronchial lymph nodes. I believe my findings to be against the view of the ability of the tubercle bacillus to pass through the intestinal mucosa without leaving traces of its progress in the form of a definite lesion. In the series the diagnosis of tuberculosis was made in twenty-three out of twenty-five cases, but these were all seen in the last stages of the disease. Three important points besides tuberculous meningitis or tuberculous peritonitis on which the diagnosis of tuberculosis in infancy is based are (1) physical signs suggesting tuberculosis in the chest; (2) tuberculin reaction, and (3) Roentgen-ray examination of the chest.

MEDICAL SOCIETY OF VIRGINIA

Annual Meeting, held at Richmond, Oct. 26-29, 1915

Custodial Care of the Feebleminded

DR. L. T. ROYSTER, Norfolk: "Responsibility" is a relative term; it depends on the mental rather than on the chronologic age. A liberal percentage of these classes are not responsible. A method has been found to test them; this is the Binet test. They have a lowered resistance to immoral influences. Physical causes may be back of it: hookworm, etc. A large percentage of prostitutes are not over 12 years of age mentally. Two per cent. of schoolchildren really belong in the feebleminded class. Defectives almost always breed true. There are three main lines on which to work: (1) prevention of propagation; (2) state control to care for the defectives; (3) relief of indigent parents. We must detect this early to apply treatment.

Diagnostic Value of Psychanalysis in Nervous Diseases

DR. J. ALLISON HODGES, Richmond: Diagnosis by dreams is of interest to doctors if there is any truth in it. Dreams are stories of wishes. Mental life is conscious and subconscious or unconscious. The difficulty is in the interpretation; many interpretations are farcical. For the average physician it is impracticable. How much of the benefit is due to suggestion from the doctor? If we spend more time getting into the inner thoughts of the patient, we shall not have to rely on dreams.

DISCUSSION

DR. A. L. TYNES, Staunton: We have been laying too much stress on the pathology of anatomy; we should put more on the pathology of physiology. I do not believe that the analysis of dreams is necessary to accurate results. Careful history taking is very important. In the more complex neuroses we are treading on dangerous ground; we should refer these patients to the neurologist.

DR. TOM A. WILLIAMS, Washington, D. C.: We should attack the underlying cause, not the hysterical paralysis, for example. Relieving this does not cure the patient; the cause

remains. Psychanalysis is as old as philosophy; it means determining the trend of the patient's thoughts.

DISEASES OF THE BILIARY TRACT

Etiology and Pathology

DR. S. B. MOON, Richmond: One attack predisposes to another. It becomes a habit. The germs enter through the mucosa and set up a focal necrosis. Most of the common bacteria of suppuration are concerned; the colon bacteria is perhaps the most frequent. The bile is altered in character. Gallstones are infrequently formed anywhere except in the gallbladder. Their formation is slow, occupying from two to five months. Cholesterin is always present, and may be the sole ingredient. Crystalloid and colloid substances are always in the bile; a disturbance of equilibrium between these two results in precipitation of one or the other. Enzymes may be the disturbing factor set free in the bile. Streptococci are not concerned in gallstones. Gallstones are a fruitful cause of cancer of the gallbladder.

Symptoms and Diagnosis

DR. HUGH H. TROUT, Roanoke: The past history should be studied carefully. History of previous attacks assists. In our series of 196 cases they were most frequent between 30 and 40 years; the youngest patient was 4 and the oldest 76. The most constant symptom was indigestion, which occurred in 112 cases. It is fortunate that most diseases that produce pain in this region are surgical, a dull aching at first. Pain radiating to the right shoulder in our series was of little value. Sharp pain of short duration, from two to five hours, but dull ache persists. Spasm of the right rectus muscle persists only during the acute attack. Elevation of temperature was most uncertain. Blood count was of great value, in diagnosis and prognosis. Agglutination time should always be noted. Waiting for jaundice is most uncertain.

Medical Treatment

DR. HUGH MCGUIRE, Alexandria: At first food should be limited to milk and cereal, and alcohol prohibited. The patient has a repugnance to fats. Proper laxatives are most important, and drastic purgatives only still further irritate the mucous membrane. Broken doses of calomel should be tried. Zinc oxid, starch and camphor are useful. In gastric catarrh, lavage should be used. Treatment for relief of acute symptoms must be used before the exact condition can be found out. The suppurative form is amenable only to surgery. In the prophylaxis of cholecystitis, hexamethylenamin should be administered throughout typhoid. Olive oil is of no benefit. Hot compresses should be used, and the patient starved for the first twenty-four hours.

Surgical Treatment

DR. LOMAX GWATHMEY, Norfolk: I am glad to see that surgeons and medical men are close together on this question. If the case is seen early, operate; if the inflammation is waning, wait.

Discussion on Diseases of the Biliary Tract

DR. HUGH TAYLOR, Richmond: One type of bile tract infection is an attenuated infection. The ampulla opens on the mucous membrane of the duodenum by so small an opening that we can scarcely see it, yet it drains a big tract. The key to the situation is not the removal of the stones, but the drainage of this vast tract.

One Hundred Cases of Heart Disease in the Negro

DR. CHARLES R. GRANDY, Norfolk: I was struck with the relative infrequency of rheumatism as a cause in the aortic cases and the large proportion of aortic cases, 56 as against 36 per cent. of mitral cases. Only five aortic cases had rheumatism as the cause. Hard work on the docks is an infrequent cause of heart disease, the natural cardiac strength of the negro enabling him to continue work at very hard labor. A preacher, aged 65, had a systolic blood pressure of 280, with diastolic of 180, and not symptoms enough to make him return to the dispensary. One negro with a pressure of 210 still pushes a truck on the docks. Normal blood pressure in adults is from 110 to 140, without regard to age; I have found persons over 80 with a pressure of 130. I would not make a diagnosis of aortic regurgitation without a high pulse pressure.

DISCUSSION

DR. DOUGLAS VANDERHOOF, Richmond: Rheumatic or streptococcic cases are extremely amenable to treatment if seen early. Removal of the tonsils must always be considered in these cases.

DR. J. W. PRESTON, Roanoke: The polygraph and the Wassermann test are of great value in the study of heart cases. The heart carries the load till it cannot any longer; then we get an arrhythmia. We know that as long as the heart is doing well it is better not to try to bring down the blood pressure. We can save a patient's life often, by treatment when failure begins.

DR. P. S. ROY, Washington, D. C.: I would call attention to some points in diagnosis. If the patient has great shortness of breath, spits blood, and has a red face, we feel that we have a mitral lesion. These patients do not often spit blood in the aortic cases, and have dyspnea late if at all. If they have regular beat, and over 120, we know the remedy is digitalis; if it does not respond to 40 drops, results will be obtained from 80 drops. The blood pressure before and after exercise should be taken. If the heart is doing well, it should go up 10 or 15 points; if the heart is not doing well, it will go down. Dropsy or enlargement of the liver, hydrothorax, etc., is more liable to occur in mitral than in aortic disease.

DR. A. L. TYNES, Staunton: Fibrillation of pulse is a symptom of grave prognostic significance. McKensie reports a series of cases, but not as large as White's. He found that not a single patient in whom this was observed was living after two years.

DR. W. E. ANDERSON, Farmville: We are attaching too much importance to blood pressure measurement. The heart stands as much use as any organ, and I think as much abuse as well.

DR. P. S. ROY: Without the presence of extrasystole, the alternating pulse is the last cry of a dying heart.

Posthospital Treatment

DR. STUART MCGUIRE, Richmond: The surgical operation never cures a patient, it only puts him in the way to get well. It often takes months and even years for the patient to get back to his normal. The question at once presents itself whether the surgeon or the family doctor should be responsible for him during this time. The best results are obtained by intelligent cooperation between the patient, the family doctor and the surgeon. The patient is sometimes so impressed by the hospital regimen that he is inclined to look back to the surgeon, rather than forward to the physician. Questions as to clothing, diet, whether or not to wear corsets, abdominal binders, baths, douches, the resumption of sexual relations, etc., tax the physician's knowledge and common sense. In the first place, all the facts of the operation and the subsequent convalescence should be written to the physician by the surgeon. I put the directions in writing so as not to tax the intelligence or understanding of the patient. Ten or twelve forms may be kept on hand that will cover most cases in which operations are performed in the general hospital, and revised for occasional cases. One or more of these forms should be sent to the physician for the patient's instruction.

Mucous Colitis

DR. JOHN W. PRESTON, Roanoke: There are two erroneous impressions about this malady, that it is rare, and that the treatment is rebellious. As to frequency, two thirds of all young adults are afflicted some time. Twenty-three patients with it have been under my care in the last five years. The sympathetic and the vagus constitute the autonomic nervous system. The vagus produces a spasmodic action in the intestine, and the sympathetic the reverse. This gives an idea of the value of belladonna and epinephrin.

THE STATE VERSUS TUBERCULOSIS

Dispensaries in the Fight Against Tuberculosis

Dr. Louis Hamman, Baltimore: It is impossible for me to contemplate a method of combating tuberculosis that does not give a prominent place to the dispensary. The first task of the dispensary is getting patients, but this is the easiest. The nurse is most important in getting the confidence of families. They must have more considerate treatment than in the usual dispensary. The second important thing is early diagnosis. Early cases must be recognized. Experience is necessary to reach success. Third is the plan of treatment. The importance of this is great to the patient. I do not feel that it is the function of the dispensary to treat great numbers. The nurse is just as important in giving instruction as is the doctor. So many things follow tuberculosis that a social service department is always necessary to solve the economic difficulties. If the staff is large enough it may make clinical study of the cases presented, and so the dispensary may serve as a center where new facts may be ascertained. The schools are deficient in the instruction about the treatment and diagnosis of tuberculosis. We have eighteen municipal nurses in Baltimore.

The Visiting Nurse in the Fight Against Tuberculosis

Dr. David R. Lyman, Gaylord Farm Sanatorium, Conn.: If I were restricted to any one of the four agencies in treating tuberculosis, namely, sanatoriums, dispensaries, advanced hospitals and the visiting nurse, I would unhesitatingly take the visiting nurse, because the others would follow as the night the day. All four are needed. New York nurses have found an average of five cases for every one registered. The nurse gets to know the people, and if she is visiting one family she is very likely to hear it if another family on that street has some one with a chronic cough. In ten years, 1,122 discharged patients earned $1,339,000. I find that patients do better at their old occupations and do better indoors than out. In common with other states, with your nurseries, your laundries and your kitchens in the hands of a race whose death rate from tuberculosis is treble your own, where should your campaign logically begin?

Discussion on the State Versus Tuberculosis

Dr. Stephen Harnsberger, Catletts: Tuberculosis is found largely among the poor, and the wage earners. So it should be largely a state or a governmental matter. Environment is of primary concern in the fight against tuberculosis. Eradication is largely a matter of abolishing poverty.

Dr. John J. Lloyd, Catawba Sanatorium, Va.: We have a sanatorium of 168 beds which I believe will be sufficient to care for the incipient cases for several years to come, and $192,000 earned by discharged patients is a good percentage on the amount invested by the state. Too many come with the idea that they will be well in one, two or three months. The patient is too apt to think that if he visits the doctor once a week, he can do as he pleases the rest of the time. The nurse who has had tuberculosis makes the best nurse. The negro problem is the biggest and the hardest one to handle.

Dr. W. A. Plecker, Richmond: The worst—the number of deaths from this disease—has not been told. They are erroneously reported. The colored people realize that it is not a good thing to have it known that they have tuberculosis. I think probably there were 4,000 deaths. If in our power, we are going to make the death rate from tuberculosis *seem* higher by getting more accurate figures.

Dr. P. S. Schenck, Norfolk: We listen to these addresses by specialists, and we are filled with enthusiasm; we go home, and we do nothing. We should go at fundamentals, namely, money and authority—authority to take the tuberculous patient out of his family, and place him where he would no longer be a menace. There are only five states in which the death rate from tuberculosis is higher than in Virginia.

Dr. R. W. Brown, Roanoke: I have been impressed with the fact that while early diagnosis is important, yet the majority of patients who come to me as preliminary examiner for Catawba Sanatorium are too far advanced to enter the sanatorium. I have lost some of the best patients in my clientele by making a diagnosis of early tuberculosis. Another fact is that we must have some place where the advanced patients can get treatment.

National Board of Examiners

Dr. L. A. LaGarde, Washington, D. C.: I am here tonight at the bidding of Dr. Gorgas, in a matter in which he is much interested. Everything is tending toward military preparedness, these days, so that if a crisis comes we shall not break down as we did in the medical department in 1898. The army has no difficulty in getting anything it asks of Congress at present, but what we are asking for now Congress cannot give. We want men to assist us in time of war. We want to prepare the medical men before the crisis. In foreign countries now there is not a medical man who is not in some way or other connected with the army medical corps. The 0.7 per cent. which we have is not a drop in the bucket if a crisis should arise. We have among other organizations the Red Cross. We have of course also the National Guard Medical Corps. But that would not be enough. We formed the Medical Reserve Corps some time ago, but it is not yet to our satisfaction. Dr. Rodman is the father of a movement to establish a central board for examination of physicians, so that they may practice their profession in any state, territory or possession of the United States. Dr. Gorgas says he will take the licentiate of this board without further examination. We can give training through summer camps and through correspondence. Many associations have adopted resolutions favoring cooperation in this matter. (Note: A resolution favorable to this was passed.)

Sanatoriums in the Fight Against Tuberculosis

Dr. Lawrason Brown, Saranac Lake, N. Y.: In the early eighties, the sanatorium idea reached America; Trudeau and Bowditch founded the institutions. Today we know that some patients pass through no incipient stage but leap from the doubtful to the advanced stage. I believe that tuberculosis is curable, but I hold that permanent arrest is the most frequent termination in the majority. The remainder of the life of the sanatorium patient must be a "sanatorium extension course." He must apply and change the knowledge until knowledge is replaced by wisdom, which is assimilated knowledge. The sanatorium must be given credit for starting the crusade. Later the public began to demand that an early diagnosis be made. A great factor in enlightenment is the influence of patients who have been educated at sanatoriums. Hard work, questionable food and rest at night in a room that cannot be ventilated means defeat for many. Every worker has heard of the "unteachable consumptive." He struggles to support his family, and grows worse; bitterness comes and carelessness; the tubercle bacillus is planted in his children; here the "night sanatorium" may be the means of saving. Thirteen states have passed laws authorizing the erection of county tuberculosis hospitals.

Control of the Poor Consumptive

Dr. Charles L. Minor, Asheville, N. C.: I speak of the poorer class of workmen and workwomen, and of our hosts of negroes whose dirtiness and ignorance is rivaled by our foreign immigrants, their tenements characterized by dirt, darkness, dampness and lack of fresh air, the dirty children playing on the dirtier floor on which the sick members expectorate indiscriminately. Do you think you or your children could stay well under such conditions, forced to eat the horribly cooked food the tired, ignorant, overworked wife prepares? Could you educate your children into healthy and useful citizens in such surroundings—sickness, no hygiene, poor food, bad examples and bad companions all around them? Leave this poor man where he is and he will surely die; but he will also drag down his family and often his neighbors; remove him to a place where he can get proper care till he dies, disinfect his tenement, watch over his children, and you will nip in the bud a focus of infection

whose evil possibilities are hard to overestimate. You are forced to the only satisfactory solution of this problem, to give your health department police power to remove him from his home, and place him in a specially constructed hospital. Here rendered harmless to his friends and his community by skilful care and thorough sputum disposal, visited at intervals by his family, he can pass his last days in comfort, no longer a menace. Liberty is conditioned on its not bringing harm to other citizens. When our legislators recognize the importance of this, they will evolve laws to meet the situation. If 3,500 Virginians die yearly from tuberculosis, each furnishing a focus of infection, the number is certainly large enough to justify the expense. I would say most emphatically that it is utterly impossible to care for these poor invalids in their homes. Those who know the habits of our poor, and especially of our negro poor, will have no illusions on the subject. The buildings may be inexpensive; the administration must be moderate.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

(Concluded from page 2117)

The Etiology of Pellagra, with Especial Consideration of the Phenomena of Sensitization to Maize and Sugar Cane Products

DR. ROY BLOSSER, Atlanta, Ga.: I do not blame granulated sugar or carbohydrates as a class with having anything to do with the production of pellagra. I claim that certain products of sugar cane contain an active poison and that all that is necessary for the development of the disease is consumption of a sufficient quantity of these poisons. I no more believe that the consumption of meat and proteins can prevent pellagra than that it can prevent the development of alcoholism in the regular drinker, though the moderate consumption of proteins is advantageous in the treatment of pellagra. My claims as to the production of pellagra by partially refined sugar cane are based on the effect of the experimental administration of these products to dogs; also to the results obtained in the treatment of from 100 to 150 cases of pellagra, seventy-two of which have been under observation more than a year, with no relapses. The treatment has been strict abstinence from cane sugar and maize products. Pellagra is a disease of improper diet; it constantly presents marked gastro-intestinal symptoms which antedate by many months or years the condition recognized as pellagra. Change in diet is admitted to be necessary in treatment. In some cases the extreme, not moderate, consumption of maize is the main factor in its production. There is a close resemblance between the effect of sugar cane and alcohol, the difference being one of degree. Individuals consuming continually large quantities of sugar cane products become sensitized to them. In advanced and chronic forms of pellagra, sugar cane products cause burning of the tongue, esophagus and stomach, palpitation of the heart and nervousness. Notwithstanding the unpleasant symptoms, the habitué craves the stimulation of the sweets. One who has become sensitized to maize will react to sugar cane and vice versa. The reaction is more marked in warm weather than in cold. Recent investigators have explained this reaction as a form of anaphylaxis.

The Problem of Spoiled Corn

MR. E. J. WATSON, Commissioner of Agriculture, Columbia, S. C.: The Southern States have been made the great dumping ground for impure corn products. Last year in South Carolina, 108 out of 240 shipments of corn meal were made of spoiled corn unfit for a hog, much less for human beings. This corn was from other states. Dangerous meal cannot be detected by inspection, as is shown by the samples exhibited. Over 40 per cent. of the corn meal shipped into the state in 1914 was unfit for any purpose, and it was either confiscated and destroyed, or when it was just above the minimum standard of safety we have permitted it to be shipped back. What effect meal from spoiled corn has had on the health conditions I do not know. The spoiling of the corn is due to the miserable system of shocking corn in the fields. The foundation of the whole trouble is the moisture which comes on account of the upturning of the ear in the shocks, which allows the development of poisonous fungi. Meal from spoiled corn is not the only injurious fungi.

Etiology of Pellagra

DR. GEORGE C. MIZELL, Atlanta, Ga.: A working hypothesis of the etiology of pellagra which appears to harmonize all disputed points is this: The one essential primary cause of pellagra is the consumption of excessive amounts of fat of the cottonseed oil group, and the storing of these oils, and their oxidation products in the body. The condition which facilitates the storing of these fatty compounds we will term the secondary cause of pellagra. The secondary cause is any systemic intoxication. [After developing his hypothesis and giving his observations in a number of institutional and other cases, Dr. Mizell reached the following conclusions:] In every region in which pellagra exists, oils of the cottonseed oil group are consumed. Where these oils are excluded from the diet of the individual or the institution, pellagra ceases to exist. The cottonseed group of oils is the only common constituent of the food of pellagrins of this country; it is of undetermined wholesomeness, and it is the only food that corresponds to the incidence of pellagra in the United States. The common constituent of these oils which differs from constituents of known wholesome oils is linolein; therefore it follows that linolein is the cause of pellagra. There are many conditions such as climate, local infectious diseases, constitutional diseases, conditions of skin, conditions of the gastro-intestinal tract and habits of individuals in selecting food, each, separately and collectively, which play a part in the incidence and progress of the disease; but the essential cause is consumption of excessive quantities of linolein.

DISCUSSION ON ETIOLOGY OF PELLAGRA

DR. H. F. HARRIS, Atlanta, Ga.: The idea that oils are associated with pellagra is very old, like everything else connected with the subject. There are really no actual facts as introduced that would go to show there is any truth in the idea. In the southern part of the country, where pellagra does not exist, they eat olive oil, but it is in the northern part that it occurs. They have practically no other food except maize. It would seem to me the people who live largely on oils would suffer if there were any truth in this hypothesis, for example, the Eskimo and the people of southern Italy, who eat a great deal of oily substances. One point in regard to the statement made by Commissioner Watson: That rotten corn is harmless is a curious doctrine. It is well known that maize, in its early stage, becomes highly acid, but at a later time the bacteria convert the albuminous portions until we get a product that is not poisonous.

DR. MOSBY, Durham, N. C.: Dr. Mizell is advancing a very ingenious theory. I have known it for some years and have never been able to accept it. There is one thing I would like him to explain on his theory: We see a mother who has pellagra, and she prepares the food for the rest of the family, and the rest of the family take pellagra. If it is a boarding house keeper, we do not see so much of this pellagra. I am convinced that pellagra is an infectious disease.

DR. ADAM HAYNE, Columbia, S. C.: The doctrine that spoiled maize is the cause of pellagra in South Carolina has been absolutely refuted on the floor here by the commissioner of agriculture. He stated that there was no spoiled corn raised in South Carolina, that none was allowed to come into the state, and that it was turned back. Yet the fact remains that there have been 1,083 deaths in this state from that disease since January 1 of this year. Now, if we are going to tell the people of this state that it is due to corn and corn products, we are going to tell them something that we cannot prove by the facts.

Dr. Roy Blosser, Atlanta, Ga.: Dr. Mizell does not claim that corn does not cause pellagra. I think he claims it does, and advances his theory as another cause. Some Italians do not eat corn, but some of them do; and it is up to some one to explain what causes pellagra when they do not eat any maize, and when maize is not imported into the country.

Dr. Cosby Swanson, Atlanta, Ga.: If cottonseed oil is the cause of pellagra, why is it that we do not see more cases of pellagra in persons between 12 and 18 years of age? In patients suffering from pellagra there is less fat deposited in the skin, the sweat and sebaceous glands are not so active; the skin is usually dry and hard, because of their inactivity.

Dr. George C. Mizell, Atlanta, Ga.: There is not one fact in statistics that does not substantiate this hypothesis. Dr. Harris said, "As an evidence that this theory is not true, in Italy and in France where much olive oil is used, pellagra does not occur." Olive oil is a nondrying oil. Cottonseed oil is a drying oil. The Eskimos do not have pellagra because they do not eat this sort of oil, but blubber oil, which is entirely different. Dr. Harris stated, in his bulletin, "It has been definitely shown beyond any doubt that there is a poisonous substance in cottonseed, and that it has nothing whatever to do with the oil." I have data to show that it has not been proved.

Dr. Goldberger says, "Pellagra is due to something that we are eating or are not eating." He says, "They are eating a cheap class of food, cheap carbohydrates, meats and fats (sow belly)." You cannot produce one patient with pellagra who eats fat derived from sow belly alone, in connection with other cheap nonfatty foods.

Dr. Siler wanted to know why negroes in one locality have pellagra to a greater extent than in another. The negress may cook for the white people in the city. She feeds her family from the white people's table; they get the same products that the white people are eating. Let the negro alone and he will buy sow belly and use the grease for cooking, thus excluding drying fats. Again, local conditions may be a secondary factor in different localities.

Dr. J. F. Siler, Washington, D. C.: Why is it that in people between the ages of 20 and 45, so many more cases occur among women than among men, in white people particularly? We have a tremendous number of cases among the females.

Dr. George C. Mizell, Atlanta, Ga.: It is due to the fact that mothers and other women of this age have more unstable health; 65 per cent. of my gastro-intestinal cases are in mothers who have gastro-intestinal autointoxication and female disturbances, which are often the secondary causes in pellagra.

In regard to Dr. Swanson's question, children between 12 and 18 do not often have pellagra because that is the period of adolescence. During that period they have a much more active sebaceous secretion which enables them to take care of large amounts of incompletely oxidized fatty waste products. The skin does not dry so easily.

Etiology of Pellagra in Children: A Study of Two Hundred Cases in Orphanages

Dr. H. W. Rice, Columbia, S. C.: Of 200 cases of pellagra in children in orphanages, 182 occurred in a local institution in four epidemics. [Data are given with reference to corn, and other dietary considerations, together with statistics regarding age, sex, coincident disease, immunity, etc., and the study is summarized as follows:] The facts in a large percentage of our cases of pellagra in this orphanage strongly discredit a causative relation of corn. The incidence of pellagra is much higher in children under 12 years of age. The discoverable differences in the diet of the smaller and larger children seem inadequate to account for this age distribution. Children are more than three times as liable to develop pellagra during the first year's residence in the orphanage as in any subsequent year. There appears to be some relation between the amount of animal foods consumed and the spread of pellagra in orphanages. The predisposing factors, age, sex, hereditary weakness, poor nutrition and coincident diseases, apparently, were operative in this series of cases.

Discussion

Dr. J. F. Siler, Washington, D. C.: In connection with a study of another orphanage in this state which we made during the course of two years, it might be interesting to refer to two or three points that Dr. Rice has brought out in his paper. This institution had about 250 orphans, the ages ranging from 5 or 6 to about 18. The majority were females, and it was interesting to find, just as Dr. Rice found, that about 75 per cent. of the children developed pellagra in the first year of residence. Two children, aged 5 and 6 years, were sent to the orphanage from Lancaster, Pa. It is improbable that the disease existed prior to their admission. Within six weeks after admission both of these children had pellagra. The diet, you can call it incomplete, poorly balanced, or anything you may choose, was not a good one. They had in this institution about forty cows, and the dairy supply of milk in 1914 was about 50 gallons per day. A great deal of the milk was made up into butter and there was much buttermilk. They had peas and beans frequently, and slaughtered their own beef twice a week, so that they sometimes had enough beef to last for four days during the week. In the fall and winter they had a great deal of fresh pork, but the diet was not, in our opinion, a satisfactory one, and we recommended that they add milk and eggs and more fresh meat.

I do not think beans and peas have anything essentially to do with the prevention of pellagra. I do think, however, that beans and peas should enter extensively into the dietary of the people, and so far as we could determine in our field observations in this country and elsewhere, they do form a very conspicuous feature of the dietary where pellagra is endemic. I was somewhat surprised in the fall of 1914 to see the papers of the South filled with the slogan, "To cure pellagra, eat beans; to prevent pellagra, plant beans and peas." I note that the slogan this year (1915) is, "Buy a cow." To this recommendation I most heartily subscribe. Our dietary investigations lead me to doubt very seriously that beans and peas contain the hypothetic pellagra-preventing vitamins in any great amounts.

Dr. W. J. MacNeal, Washington, D. C.: A thing of great importance is the age distribution of pellagra. This is probably a matter of physical resistance of individuals at different ages. It means simply the resistance to disease of all sorts, and follows that curve. Of course it is not absolutely so, but there is that tendency to resistance of disease of all sorts. During the period from 15 to 19 the death rate is low and the natural vitality greater than in other periods. The recovery of these patients while continuing on the same diet is important. These children come here, they take this deficient diet, which we may criticize as much as we will, without saying in exactly what respect it is deficient. They show typical erythema, and subsequently recover and live three or four years without recurrence.

Dr. Joseph Goldberger, Washington, D. C.: The immunity to which Dr. Rice calls attention, which apparently developed after one or two years of residence at the orphanage, can be explained by the fact that after a year or two of institutional residence, the child reaches the age which admits it to the group having the better diet. The fact that the difference in the diet of the younger and of the older children did not seem adequate to Dr. Rice to explain the difference in the incidence of pellagra in the two groups should have no weight. The important thing to remember is that a difference was discernible. In the present state of our knowledge we have no way of telling whether a particular diet is adequate or inadequate. The only way we can judge of that is by its physiologic effects: that is, by trying it for a long enough time.

Dr. George C. Mizell, Atlanta, Ga.: If diet is the cause of pellagra, there must have taken place in the diet of the American people some radical change. Fifteen or twenty years ago people were just as particular in the selection of their diet as they are today. Take into consideration the fact that in 1908 only 10 per cent. of the people were eating cottonseed oil products. In 1910, 48 per cent. of the people were eating cottonseed oil products. The consumption of cottonseed oil products jumped to 50,000,000 gallons in 1908.

DR. H. W. RICE, Columbia, S. C.: My personal opinion is that children should be fed more milk and not so much meat, but they should have more of both than the children of this orphanage have had. Coincident disease as well as dissipation in adults no doubt plays a part in the etiology. As to Dr. Goldberger's point, that there was shown to be a difference in the diet in the older and younger children, I said that the slight difference did not seem adequate to account for the relative difference in the incidence of the disease in the respective groups. Of course it can be only a matter of opinion in the present state of our knowledge of the subject.

Comparison of Chemical Changes in Central Nervous Systems of Pellagrins and Animals Subjected to an Exclusive Vegetable Diet

MATHILDE L. KOCH and CARL VOEGTLIN, Spartanburg, S. C.: If pellagra is due to a dietary abnormality, as has been suggested by many students of the disease, it should be possible to reproduce in animals by dietary means some, if not all, of the pathologic changes which are observed in pellagra. The present paper represents an abstract of one phase of this investigation, and can be summed up as follows: The diet which seems to give rise to pellagra is made up largely of vegetable foods, being rich in carbohydrates. This diet, if fed continuously to healthy monkeys, rats, mice and other animals, leads to symptoms and chemical and histologic changes in the organs very similar to those found in pellagra. Although the explanation as to how this diet leads to pellagra is still lacking, the observations made on our animals furnish valuable support to the dietary theory of this disease. These observations are particularly important when brought into connection with the extensive unsuccessful attempts to transmit the disease to animals by means of inoculation of material from pellagrins. Both the diet used in these feeding experiments and that consumed by persons developing pellagra seem to be lacking in certain chemical substances contained in relatively large amounts in such animal foods as milk, eggs and meat.

DISCUSSION

DR. J. F. SILER, Washington, D. C.: It is extremely interesting that pellagra concurs with such remarkable rarity in nursing children. We know from the literature of the subject that beriberi, a deficiency disease, is common in nursing infants. If pellagra were a deficiency disease, it seems to me that its age distribution, so far as nursing infants are concerned, would be similar to that in beriberi. As a matter of fact, it is hardly possible to have a more remarkable dissimilarity.

DR. ROY BLOSSER, Atlanta, Ga.: I am sorry that Dr. Voegtlin did not emphasize the pathologic conditions in the spinal cord. The essential changes in pellagra of the spinal cord are in the upper part of the cord, and distinguish them from the changes in other diseases, notably tabes. I think corn syrup in the diet was mentioned. That term, I think, ought to be eliminated, because corn syrup is a mixture and it has a very high percentage of glucose, which, so far as we know, is chemically pure. That is the only place where the corn gets in, so I think it would be much better if that term were eliminated; but I do not know what term could be substituted in its place.

CARL VOEGTLIN, Spartanburg, S. C.: In regard to the comment of Dr. Blosser, it seems unnecessary to call attention to the great similarity of the photomicrographs of the spinal cord in our experimental animals with those obtained from pellagrins. Anybody who has seen the work of Tuezek will be struck by the great resemblance of his illustrations with those presented today. The corn syrup used at the Pellagra Hospital is not chemically pure glucose; it is made from corn starch.

Differential Diagnosis of Skin Manifestations of Pellagra

DR. COSBY SWANSON, Atlanta, Ga.: The differential diagnosis must be made on clinical grounds alone. We have neither definite etiologic knowledge nor laboratory diagnostic methods. The skin manifestations present congestion, thickening and pigmentation, and atrophic thinning. The eruption may begin as macules which fuse, forming patches of livid red erythema. The tissues are generally swollen. In a short time the redness fades and the surface becomes covered with scales. In some cases vesicles, bullae and ecchymotic lesions complicate the process. The surface may become raw. The skin may resume a normal appearance, but after several recurrences it atrophies. A symmetric distribution of the lesions is characteristic. Itching and burning often precede the eruption. At the beginning it may resemble a sunburn. Skin diseases resembling pellagra are acrodynia, erythema solare, erythema caloricum, erythema ab igne, erythema pernio, erythema multiforme, eczema, trade dermatitis, dermatitis venenata, lupus, syphilis and erysipelas. Acrodynia somewhat resembles pellagra, but runs a shorter course, rarely ever recurs, and is rare. Sunburn resembles the early rash of pellagra, but the area is usually less acutely inflamed. There is less redness, and it gradually fades instead of becoming darker as in pellagra, and is followed by less exfoliation. Erythema multiforme is prone to recur, is usually seen in spring and autumn, and is accompanied by nervous and gastro-intestinal symptoms. It differs from pellagra in that the eruption is found on the flexor oftener than on the extensor surfaces, and seldom on the face, rarely involves the entire surface, does not exfoliate, and is not followed by pigmentation. Its duration is short.

Erythema and eczema may be mistaken for pellagra eruptions. It generally begins as macules or erythematous spots with swelling accompanied by excessive burning and itching. Desquamation begins in a few days, and often continues for several weeks and may become chronic. Exposure to heat, cold, wind and other irritants often causes an outbreak. It differs from pellagra in that it occurs at all seasons, is not symmetric, is usually seen on the flexor surfaces as well as on the extensor, the edema is more marked, and it is accompanied with more itching and burning. The differentiation from dermatitis venenata can usually be made by the history, duration and location of the eruption.

Lupus erythematosus disseminatus can usually be distinguished by the location, shape, time of occurrence, color, course, duration and other symptoms of pellagra. Syphilitic eruptions can usually be differentiated by the history of a primary lesion, the secondary rash on the body, character of eruption, positive Wassermann and other symptoms of syphilis.

Pellagra

DR. H. W. DUDGEON, Director, Khanka Lunatic Asylum, Cairo, Egypt: I can only reiterate my belief in the maize theory of pellagra which is extremely prevalent in Egypt. I have examined physically many thousands of residents of Egypt (mostly Egyptians) from all districts and from all classes of society, during the last fourteen years, and it has been impressed most strongly on me how entirely this disease is confined to the villagers of the poor class; it is almost unknown among those who live in the towns, and it is also most uncommon in the districts (Upper Egypt) where millet is grown. The Egyptian villager's diet has maize as the main ingredient, and wherever maize is the staple form of diet, there you find pellagra. In fact, it is so rife among the villagers that I doubt if it can have been endemic to this country for a great number of years, and with this idea and the similarity of many of the symptoms to some accounts I was able to obtain of chronic atropin poisoning, I sent a certain number of specimens of maize to England for analysis, with the attempt to see if the alkaloid atropin or its allied group of alkaloids were present. No atropin was found, but the leaves of certain specimens did contain an alkaloid and one of them did not. The alkaloid was too small in amount for identification, but it was sufficient to prove that it was not one of the more commonly known alkaloids, and the leaves of the specimen happened to be that of the oldest species of maize cultivated in Egypt. My opinion is that pellagra is a multiple neuritis, and may be due to an alkaloid administered in minute doses, possibly by the seeds absorbing the poison from the leaves, and that it is accidental and due to maize faultily stored; it is evidently not normally found in maize seeds, nor do I think all kinds of maize leaves contain it.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

December, X, No. 6, pp. 397-488

1 *Duodenal Ulcer in Infancy an Infectious Disease. L. Gerdine and H. F. Helmholz, Chicago.
2 Comfortable Arrangement for Separate Collection of Urine and Feces of Male Infants. A. M. Courtney and H. L. Fales, New York.
3 Oxalic Acid Excretion in Urine of Children. J. P. Sedgwick, Minneapolis.
4 Phthalein Test in Orthostatic Albuminuria. T. C. Hempelmann, St. Louis.
5 Influence of Clothing on Surface Temperature of Infants. W. B. McClure and L. W. Sauer, Chicago.
6 *Ammoniacal Diaper in Infants and Young Children. J. Zahorsky, St. Louis.
7 Acute Myelitis Following Varicella; Report of Case. D. C. W. Smith, Baltimore.

1. Duodenal Ulcer.—In ten out of fourteen ulcers examined by the authors, diplococci were found in the ulcer base, in such numbers and in such a position that they presumably are of etiologic significance. Furthermore, in one of the cases a *Streptococcus viridans* was isolated from the duodenal ulcer, which on injection into rabbits and dogs localized in the pyloric end of the stomach and duodenum and there produced hemorrhages and ulcerations. This case was the only one in which the authors were able to obtain the organisms in pure culture, and the only one in which the necropsy was performed shortly after death. In two other cases a few streptococci were seen in the bouillon cultures, but the cultures were so overgrown with colon bacilli that it was impossible to isolate the streptococci. In one case only the colon bacillus was grown.

6. **Ammoniacal Diaper.**—The ammoniacal diaper is frequently encountered by the practitioner. Usually, the odor of ammonia is faint, especially in young infants. Only occasionally does the concentration become sufficiently intense to produce the characteristic irritation of the skin. The lesions consist of inflamed areas on the inner side of the thighs, the genitals, the buttocks and lower abdomen. The skin lesions nearly always appear in the morning when the infant has lain for a long period during the night. Infants who do not wet the diaper are not subject to this trouble. In fact, enuresis and ammoniuria go together. The ammoniacal diaper is a frequent precursor of pyelocystitis in female infants. The onset is usually abrupt and the course is irregular and indefinite. The irritating urine may be present for one day only; then it may last for weeks. Zahorsky has collected notes of seventy-eight cases, in all of which the patients showed some skin lesions, and the ammonia was sufficiently intense to warrant more than a passing notice. Of these seventy-eight cases, fifty-four, or about three fourths, occurred in children over 10 months of age. The severest lesions occurred in boys. The disorder seems to be almost limited to artificially fed infants. Zahorsky has searched long for the cause of this disorder and he is now convinced that the ammonia is derived from the ammonium compounds in the urine, and is liberated by an alkali present in the diaper—soap, lye, lime or stool.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

November, III, No. 5, pp. 247-310

8 Schistosomiasis Japonica. A. C. Reed, Changsha, China.
9 Plague Preventive Measures; Their Development and Present Status. R. Blue, Washington, D. C.
10 Experiences in Treatment of Plague in New Orleans. W. H. Seemann, New Orleans.
11 Control of Yellow Fever in Immune Community without Use of Fumigation. G. M. Converse, U. S. P. H. S.
12 Method of Concentrating Malaria Plasmodia for Diagnostic and Other Purposes. C. C. Bass and F. M. Johns, New Orleans.

Boston Medical and Surgical Journal

November 25, CLXXIII, No. 22, pp. 795-830

13 What General Practitioner Should Know About Incipient Pulmonary Tuberculosis. V. Y. Bowditch, Boston.
14 Medical Aspects of Empyema and Pulmonary Abscess. F. T. Lord, Boston.
15 Recognition of Pleural Disorders by Roentgen Rays, with Special Reference to Empyema. P. Brown, Boston.
16 Pneumodynamics of Empyema. F. J. Cotton, Boston.
17 *Treatment of Chronic Empyema. F. B. Lund, Boston.
18 *Lung Abscess and Bronchiectasis from Surgical Point of View; Certain End-Results of Acute and Chronic Empyema. W. Whittemore, Boston.

December 2, No. 23, pp. 831-866

19 Dangers of Ether as Anesthetic. W. W. Keen, Philadelphia.
20 *Pregnancy and Diabetes Mellitus. E. P. Joslin, Boston.
21 Surgical Specialties in Hospitals. P. Thorndike, Boston.
22 *Etiology and Treatment of Heart Disease. P. D. White, Boston.

17. **Treatment of Chronic Empyema.**—Lund says that in localized chronic empyema, decortication has usually given most brilliant results and been successful the first time. Decortication is not a cure-all or specific. It must be thoroughly and intelligently used, and must be preceded and followed by all the tricks and dodges which experience can suggest to secure lung expansion, except those methods which imply suction apparatus and provide an inadequate drainage opening. It may have to be supplemented in certain obstinate cases by rib resection. On the whole, however, and properly used, it must be regarded as an invaluable method in cases in which the later simple methods fail to cure, and the ultra radical methods are sure to kill patients.

18. **Surgery of Lung Abscess and Bronchiectasis.**—Although the operation for acute empyema may be a simple one, yet, Whittemore says, the results have been far from satisfactory. After an acute case becomes chronic, the outlook for the patient becoming a useful member of the community is questionable. Surgery has little, if anything, to offer cases of bronchiectasis at present. The surgery of lung abscess is most encouraging, and a greater number of cases are constantly being successfully operated on.

20. **Pregnancy and Diabetes Mellitus.**—Out of the seven cases of moderate or severe diabetes associated with pregnancy cited by Joslin, four patients are dead, one by suicide, one with uremic manifestations ascribed to neglect, a third died in coma, pregnancy having developed after diabetes had existed for a year, but treatment was neglected, the patient later being under the care of a clairvoyant, and the fourth in which the patient successfully went through her first pregnancy in 1897 with a healthy child, but again was confined and the child lost in 1905, the patient dying two months later of pulmonary tuberculosis. Of the three remaining patients, one is in exceptionally good health, free from sugar and has a normal child six months after delivery; another is in a tolerable condition, having been pregnant three times but with only one child now living; and the remaining patient is alive, although severely ill with diabetes six years after confinement. All of the seven patients with moderate quantities of sugar in the urine are well.

Joslin says that the secret of success in the treatment of pregnant women with sugar in the urine is: 1. To have the patients under constant supervision throughout the course of the pregnancy and for some months after confinement. 2. Treatment should follow exactly the same methods which are employed in the treatment of the usual case of diabetes. 3. Even when sugar appears to a slight extent in pregnant women, it should be carefully watched and controlled by diet. 4. The advantages of a cesarean section should be borne in mind. 5. Whereas ether anesthesia may work well, it is probably not so safe as gas and oxygen. If ether should be used, as brief an anesthesia and as little ether as possible should be employed. 6. Finally, many statements occurring in the literature of pregnancy and diabetes must be revised. Pregnancy in diabetes does not demand immediate abortion, even if acidosis is present. If pregnant diabetic cases are suitably managed, they will likely abort less frequently. It cannot yet be accepted as proved that pregnancy aggravates a diabetes. It is quite possible that the reason for a patient with diabetes becoming worse during pregnancy is simply due to the ingestion of an unusual quantity of food. Nursing is not contraindicated following confinement, for the diversion which it affords the patient may offset the extra demands thrown on the metabolism.

22. **Treatment of Heart Disease.**—White summarizes his study of 200 cases as follows: The male sex is more subject to auricular fibrillation, auricular flutter, heart block and alternation of the pulse than the female sex. The older the patient with heart disease the more subject is he to serious abnormalities of the heart beat. Auricular fibrillation and alternation of the pulse occur at the same ages, most frequently in the fifth and sixth decades. Rheumatic hearts usually show normal mechanism or auricular fibrillation, much less commonly pulsus alternans. A considerable percentage (36 per cent.) of syphilitic hearts showed alternating pulse; few were fibrillating. A patient with cardiac insufficiency in the course of cardiorenal disease is apt to show pulsus alternans, either constant or more frequently only after ventricular premature beats. Cardiosclerosis often results in the production of fibrillation and alternation. Hyperthyroidism of long standing is sometimes attended by auricular fibrillation. Alcohol, tobacco, tea and coffee appear to play no direct part in the production of serious disorders of the heart beat. Two thirds of the patients with auricular fibrillation, one half of those with alternation of the pulse, and one-third of those with normal mechanism in the series analyzed by White, showed physical signs of cardiac insufficiency. Digitalis was used in 88 per cent. of these decompensated cases, almost always in the form of pills of standardized leaves. Intravenous medication was used in urgent cases only. Morphin was given beneficially in nearly one half of the patients with physical signs of insufficiency, often one dose sufficing to give the patient the first comfortable night in weeks. Venesection was found useful in a few urgent cases. The change in diet to five small meals daily was often much appreciated by the patient.

California State Journal of Medicine, San Francisco

November, XIII, No. 11, pp. 415-454

23 Modern Diagnosis of Hematuria. M. Krotoszyner, San Francisco.
24 Clinical Records. E. S. Kilgore, San Francisco.
25 Conditions in Lower Back Involving Sacrolumbar and Sacro-Iliac Articulations. C. L. Lowman, Los Angeles.
26 Diagnosis of Ureteral Calculi, and Technic for Use of Wax-Tipped Catheter in Male. F. Hinman, San Francisco.
27 *Finding of Arsenic in Cerebrospinal Fluid Following Intravenous Administrations of Neosalvarsan. J. H. Barbat, San Francisco.
28 Blood Transfusion Simplified. A. V. Doran, Vallejo.
29 Paper-Bag Holder for Reception of Soiled Surgical Dressings. H. M. Sherman, San Francisco.
30 Panama-Pacific Dental Congress. L. Van Orden, San Francisco.

27. **Arsenic in Cerebrospinal Fluid.**—In the case which Barbat reports, the patient was given a full dose of neosalvarsan and 43 c.c. of the cerebrospinal fluid was immediately withdrawn. This fluid was not examined for arsenic, but showed a strong Lange reaction for paresis. Four days afterward he received another dose of neosalvarsan, and 30 c.c. of the cerebrospinal fluid immediately removed, which was found to contain 1/100,000 metallic arsenic.

Journal of Experimental Medicine, Lancaster, Pa.

December, XXII, No. 6, pp. 675-847

31 *Relation of Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice. Importance in Production of Hemolytic Jaundice of Path of Hemoglobin to Liver. J. H. Austin and O. H. P. Pepper, Philadelphia.
32 *Id. Influence of Diet on Anemia Following Splenectomy. R. M. Pearce, J. H. Austin and O. H. P. Pepper, Philadelphia.
33 Studies on Circulation in Man. Development of Collateral Circulation in Right Hand After Ligation of Innominate Artery for Subclavian Aneurysm. G. N. Stewart, Cleveland.
34 Acceleration of Esterase Action. J. W. Jobling, A. A. Eggstein and W. Petersen, Nashville, Tenn.
35 Relation of Serum Esterase to Liver Destruction. J. W. Jobling, A. A. Eggstein and W. Petersen, Nashville, Tenn.
36 Origin of Tumors in Mice. Tumor Incidence and Tumor Age in Hybrids. A. E. C. Lathrop and L. Loeb, St. Louis.
37 *Influence on Spleen and Thyroid of Complete Removal of External Function of Pancreas. J. E. Sweet and J. W. Ellis, Philadelphia.
38 *Influence on Tadpoles of Feeding Desiccated Thyroid in Variable Amounts and of Variable Iodin Contents. C. H. Lenhart, Cleveland.
39 *Experimental Pneumonia (Friedländer Type). W. R. Sisson and I. C. Walker, Boston.
40 Experimental Study of Blood Glycolysis. Effects of Thyroid and Suprarenal Extracts and Phlorhizin on Glycolysis in Vitro. G. M. Mackenzie, New York.
41 *Diet and Tumor Growth. W. H. Woglom, New York.
42 *Antityphoid Vaccination. H. J. Nichols, San Francisco.
43 Relationship of Chronic Protein Intoxication in Animals to Anaphylaxis. W. T. Longcope, New York.
44 *Effect of Roentgen Rays on Rate of Growth of Spontaneous Tumors in Mice. J. B. Murphy and J. J. Morton, New York.
45 Biologic Classification of Pneumococci. O. T. Avery, New York.
46 Spontaneous and Experimental Leukemia of Fowl. H. C. Schmeisser, Baltimore.

31. **Relation of Spleen to Blood Destruction.**—The experiments reported on by Austin and Pepper indicate that when hemoglobin is set free in the portal circulation a larger amount is held by the liver and converted rapidly into bile pigment than is the case when it is set free in the general circulation, and that, under the former condition, overloading of the liver with bile pigment more readily occurs and jaundice is more apt to develop. The authors conclude that this mechanical influence must, therefore, be a factor in the lessened tendency after splenectomy to the jaundice which follows blood destruction due to hemolytic agents for whether the spleen be an active factor in destroying the erythrocytes, or whether it plays merely a passive part as a place for the deposition of the disintegrating cells, there can be no question that in this organ, when it is present, a large number of cells undergo their final disintegration after the action of hemolytic poisons, and that the hemoglobin there liberated passes by the portal system directly to the liver. When the spleen is removed, this disintegration occurs in other organs, notably, in the lymph nodes and bone marrow, and the hemoglobin from these organs passes not into the portal but into the general circulation, from which it reaches the liver more gradually and in a more dilute form.

32. **Influence of Diet on Anemia Following Splenectomy.**—The author's experiments showed that the anemia which develops after splenectomy is most marked in animals on a mixed table scrap diet of meat, bread, cereals and vegetables, which is essentially a cooked diet. Control studies in which a unilateral nephrectomy precedes splenectomy demonstrate that the anemia is not due to operation, hemorrhage, or accidents of convalescence, but develops only in the absence of the spleen. The results of studies of the influence of food containing a large amount of iron in presumably easily utilizable form, as in raw beef spleen, do not support the view that the anemia is due to lack of iron in the food. Observation on the influence of a diet of raw meat as contrasted with cooked meat, shows a more severe anemia in animals on the cooked diet and suggests the possibility that heat alters some substance which, in the absence of the spleen, the body cannot utilize. A final conclusion in regard to this point must, however, await the results of more detailed studies now in progress.

37. **Removal of External Function of Pancreas.**—Quite by accident Sweet and Ellis noted in two cases that the complete removal of the function of the pancreas concerned in digestion is followed by marked changes in the spleen and in the thyroid apparatus. Second, the spleen shows an extreme simple atrophy. Third, the thyroid apparatus exhibits a constant change shown by the macroscopic transparency of the gland, by the microscopic increase in the amount of colloid, by the chemical increase of the iodin content of the gland, and by the functional test of the delayed appearance of tetany after the complete removal of the thyroid apparatus.

38. **Influence of Desiccated Thyroid on Tadpoles.**—The activity and potency of the physiologically active substance of the thyroid, Lenhart states, is measurable in terms of its percentage iodin content. He points out that the reaction of tadpoles to thyroid feeding is so sensitive that the procedure might well serve as a biologic test for the activity of thyroid tissue, superior even to chemical methods.

39. **Experimental Pneumonia.**—The studies described by Sisson and Walker are based on findings in thirty-nine cats. The culture used was recovered from the lung exudate of a patient who died thirty-one and one-half hours after the onset of the first symptoms. The organism had the characteristics of *Bacillus mucosus capsulatus*. Judging both from the clinical course and from the pathologic findings, this form of pulmonary infection differs from the usual

pneumococcus types of pneumonia and closely resembles the so-called Friedländer's bacillus or *Bacillus pneumoniae* in man. In all instances in which a lobar pneumonia was found after the injection of the bacillus, a similar organism was recovered from the lung, and in no case was this associated with other organisms. In 87 per cent. of the animals showing a lobar pneumonia positive blood cultures were obtained. The pathologic findings, judging from the early stages of the disease, are subject to considerable variation. In some instances the process may suggest a pseudolobar or confluent lobular distribution. In the majority of cases, however, the process gave a more homogeneous appearance, suggesting a diffuse and uniform distribution. Foci of hemorrhage were not uncommon in both. In all instances the consolidated lung presents a greater infiltration of tissue than is usually seen in other types of experimental pneumonia. The histologic findings are also subject to considerable variation. In most instances the infundibular and alveolar spaces are completely filled with an exudate made up chiefly of polymorphonuclear cells. Associated with these are the capsulated bacilli, large vacuolated mononuclear phagocytic cells, and red blood cells and occasionally small amounts of fibrin.

41. **Diet and Tumor Growth.**—Woglom found that lactose does not increase the receptivity of mice and rats for the transplantable carcinomas of their species.

42. **Antityphoid Vaccination.**—Evidence is presented by Nichols on the following subjects: (1) the infectious power of a living, sensitized vaccine; (2) the absence of immunity in vaccinated rabbits to direct gallbladder infections; (3) the relative pathogenicity, virulence, and toxicity of the strain used in the army vaccine; (4) local vaccine reactions after typhoid and after immunization, and (5) skin reactions as an index of immunity.

44. **Rate of Growth of Tumors in Mice.**—According to Murphy and Morton Roentgen ray administered directly to the cancer outside of the body is insufficient to prevent the growth of a graft returned to the original host. On the other hand, the same small dose of Roentgen ray given to the animal with the cancer removed was sufficient to render 50 per cent. of the mice so treated immune to returned untreated grafts of their own tumors and greatly retard the growth in the other 50 per cent.

Surgery, Gynecology and Obstetrics, Chicago

December, XXI, No. 6, pp. 669-786

47 End-Results of Seventy Cases of Renal Tuberculosis Treated by Nephrectomy. E. G. Crabtree and H. Cabot, Boston.
48 *Nephrectomy During Pregnancy; Report of Cases. L. E. Schmidt, Chicago.
49 Case of Dietl's Crisis in Anomalous Right Kidney Associated with Left Pelvic Kidney. R. C. Bryan, Richmond, Va.
50 Correction of Depressed Fractures of Nose by Transplant of Cartilage. E. H. Beckman, Rochester, Minn.
51 Some Interesting Experiences in Thyroid Surgery. A. McGlannan, Baltimore.
52 *Rôle of Oxyuris Vermicularis in Etiology of Appendicitis and Allied Pathologic Conditions. K. Suzuki, Japan.
53 Methods Employed for Determining Hydrogen-Ion Concentration in Body Fluids. W. J. Crozier, W. B. Rogers and B. I. Harrison, Cleveland.
54 *End-Results in Two Hundred and Forty-Two Cases of Simple Fracture of Femoral Shaft. P. Martin, Rochester, Minn.
55 Vaginal Supravaginal Hysterectomy for Procidentia and Large Cystorectocele Associated with Chronic Fibrosis Uteri. H. N. Vineberg, New York.
56 Myoma of Stomach; Report of Case Successfully Removed. J. E. James, Jr., and S. W. Sappington, Philadelphia.
57 Spontaneous Rupture of Spleen. J. E. Cannaday, Charleston, W. Va.
58 Appendix. C. C. Waller, Lyndonville, Vt., and L. G. Cole, New York.
59 Apoplexy. C. M. Remsen, Atlanta, Ga.
60 Chordoma; Report of Malignant Case from Sacrococcygeal Region. H. Albert, Iowa City, Iowa.
61 *New Operation for Umbilical Hernia. F. G. DuBose, Selma, Ala.
62 Intratracheal Ether Anesthesia; New Apparatus and Intratracheal Tube. S. Robinson, Rochester, Minn.
63 *Operation for Cure of Hernia Between Abdominal Recti. W. E. Fairfield, Green Bay, Wis.
64 Bullet Removed from Brain After Six Years. E. Mammen, Bloomington, Ill.
65 Modified McBurney Incision for Treatment of Appendicitis and Pelvic Disease. A. H. Harrigan, New York.
66 Use and Abuse of Lane Plates. J. Frank, Chicago.

48. **Nephrectomy During Pregnancy.**—From the literature as well as from personal observation, Schmidt has come to the conclusion that a woman with one healthy kidney—and that implies that no infection remains whether it be tuberculosis or a pyogenic infection—does not carry much greater risk, nor does the fetus, than the more fortunate woman who has two kidneys, and that consent to marriage and pregnancy cannot be withheld. There are questions such as how soon after nephrectomy may one, without danger, become pregnant. Schmidt is of the belief that if a period of several years of complete absence of kidney disease elapses it is safe. There is a greater need for exact observation of these cases, so that in case of the recurrence of any (nephrictic) symptoms, induced abortion or labor can be carried out in order to prevent chronic kidney changes which might result in making an invalid of a woman having only one kidney.

52. **Rôle of Oxyuris in Etiology of Appendicitis.**—Suzuki examined 500 post mortem cases, among which were 44 oxyuris cases. The oxyures were found twenty-nine times (66 per cent.) in the cecum and appendix, six times (14 per cent.) in the cecum alone, and nine times (20 per cent.) in the appendix alone. Suzuki was able to ascertain that a true inflammation is provoked by the parasites when the latter have penetrated the wall of the appendix in large numbers, and that the traumatically destroyed fissure in the tissue is for a protracted period of time in connection with the lumen, thus offering the infecting agent a portal of entry. This type of the disease offers distinct histologic data, for which reason Suzuki has designated it "appendicitis oxyurica." But this type of the disease is only rarely met, and among 103 surgically extirpated appendices Suzuki met but one case. A noninflammatory, but pain-producing morbid condition of the appendix is sometimes caused by the oxyuris in which cases traumatic destruction of the tissue accompanied by hemorrhage can always be demonstrated.

54. **Fracture of Femoral Shaft; End-Results.**—Martin found that 90 per cent. of all cases of simple fracture of the shaft of the femur in children are followed by complete recovery. The average period of treatment of children in bed and with crutches, splints and bandages is two to three months. Between the ages of 15 and 25 years there is about 50 per cent. of complete recoveries, while after 25 years the permanent disability is proportionate to the age of the patient. Men above 40 years rarely regain strength and activity. In adults in the absence of shortening there may be a lasting weakness of the leg and thigh. Permanent disability is as a rule associated with shortening, and is to an extent proportionate to the degree of shortening. The average time in bed and with crutches, splints, and bandages in adults is eight months. In adults at time of discharge (eight to ten weeks) there is stiffness of the knee in 100 per cent. of cases. Among adult laboring men, 90 per cent. never become able to perform their regular occupations. Among adult males not of the laboring class, the great majority are able to perform their regular occupations. The unsatisfactory results following the weight extension treatment of simple fracture of the femoral shaft in adults suggest that this method is either inadequate in itself or unskilfully applied. Efforts for obtaining better results in adults should be directed to: (a) the employment of more weight in procuring extension, in the effort to entirely overcome the deformity; (b) early resort to open operation if extension seems inefficient; (c) the systematic use of massage and passive motion continued for months; (d) a longer use of crutches than is now customary; (e) education of the patient.

61. **New Operation for Umbilical Hernia.**—The surgical principles involved in Dubose's operation provide for the attachment of the umbilical ligaments at a point in the suture lines so that the pull exerted by them does not favor gaping. The neck of the sac is isolated, opened, and its contents freed and returned into the abdomen; it is then amputated, and the peritoneal edges everted and approximated by a running mattress or purse-string suture. A transverse incision is made at the upper, and a parallel incision at the lower margin of the umbilical ring, thus

mobilizing two lateral fascial flaps to be united by interrupted sutures. Running in the long axis of each flap is the third tendinous intersection of the rectus abdominis muscle. The edges of the upper and lower lines of incision are brought together by interrupted sutures, thus forming a double aponeurotic wall, with lines of approximation at right angles. Two figure-of-eight silkworm-gut sutures are introduced, going deeply enough to catch the underlying fascial flap, and brought out through the skin an inch from the margin of the incision. When these are tied they relieve the strain in all directions on the aponeurotic lines of union and close the dead space in the subcutaneous fat. On the posterior surface of the lateral aponeurotic flaps is the attachment of the umbilical ligaments. When the inner ends of these flaps are sutured together the hernial opening in the umbilical ring is closed and the attachment of the round ligament of the liver above and of the urachus and the obliterated umbilical arteries below are restored anatomically. All traction exerted by these ligaments pulls on the upper and lower ends of the line of approximation of the two lateral flaps, thus having a tendency to close and not to pull apart the sutured edges of these two flaps.

63. **Operation of Hernia Between Abdominal Recti.**—The operation proposed by Fairfield depends essentially on the conversion of the two fascial spaces containing the recti into one space, obliterating thereby the natural separation of the two muscles, and interposing both muscles over the hernial point.

Wisconsin Medical Journal, Milwaukee

November, XIV, No. 6, pp. 221-261

67 Changing Conceptions of Cardiac Disease. E. L. Tuohy, Duluth, Minn.
68 Sudden Changes of Refraction in Diabetes. C. Zimmermann, Milwaukee.
69 Diagnosis and Treatment of Pulmonary Tuberculosis. N. E. McBeath, Livingston.
70 Puerperal Sepsis. G. A. Carhart, Milwaukee.
71 Recent Medical Legislation. P. F. Rogers, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, London

October, III, No. 10, pp. 157-348

1 *Ileus Duplex; Inflammatory Enterocolic Ileus. W. S. Handley.
2 *Clinical Aspects of Visceroptosis. A. J. Walton.
3 *Case of Paget's Disease (Osteitis Deformans). G. Jefferson.
4 Cases of Gas Poisoning Among British Troops in Flanders. J. R. Bradford and T. R. Elliott.
5 Hemothorax. J. R. Bradford and T. R. Elliott.
6 *Treatment of Septic Wounds in War by Magnesium Sulphate Solution. A. E. Morison and W. J. Tulloch.
7 Treatment of Traumatic Aneurysms Resulting from Bullet Wounds. R. Morison.
8 Traumatic and Arteriovenous Aneurysm. G. G. Turner.
9 Surgical Diseases of Colon. R. Morison.
10 Unilateral Renal Hemorrhage Due to Obstructive Calcifying Papillitis. C. A. Pannett.
11 Hydatid Disease of Peritoneal Cavity. S. White and J. H. Cobb.

1. **Ileus Duplex.**—Ileus duplex, according to Handley, who has supplied the name, is a condition in which, as the result of a pelvic peritonitis there is obstruction of the intestine at two points: (a) In the ileum, at a point about 3 feet above the ileocecal valve; (b) in the sigmoid colon, at the junction of its iliac and pelvic portions. These are the points at which the ileum and colon, respectively, cross the brim of the true pelvis to enter the pelvic cavity. The segments of paralyzed intestine are two in number: First, the portion of ileum contained in the pelvis, that is to say, about the lower 3 feet, excluding the last 2 inches; and second, the portion of the large bowel contained in the true pelvis, namely, the lowest portion of the pelvic colon and the upper portion of the rectum. The condition, though curable by appropriate treatment, in the early stage often passes unrecognized under the pseudonym of general peritonitis.

2. **Visceroptosis.**—Sixty-seven cases have been analyzed by Walton. They have been divided into the following groups according to the disease they simulate: (1) Cases resembling appendicitis; (2) cases resembling gastric ulcer; (3) cases resembling gallstones; (4) cases resembling gastric carcinoma. Twenty-nine cases were diagnosed as appendicitis. Of the twenty-nine cases, thirteen have resembled acute and sixteen chronic appendicitis; but this group does not include cases of true chronic or acute appendicitis in which visceroptosis was also present. There were twenty-seven cases resembling gastric ulcer, but five of them must be considered apart from the others. These five patients showed well-marked evidence of visceroptosis, but in addition had either a gastric or duodenal ulcer. The remaining twenty-two showed visceroptosis alone. They were of the type frequently operated on in the belief that a gastric ulcer was present. At operation, there was no trace of an ulcer in the stomach or duodenum. The operative procedures consisted in dividing any excessive bands or adhesions, and if the appendix was bound down by the Jackson's membrane, it was removed. In one patient only, in whom the stomach appeared to be hypertrophied, and in whom there was an excessive pyloric spasm, the pylorus was occluded and a posterior gastro-enterostomy performed. In two patients the right kidney was exceedingly movable, and nephrorrhaphy was carried out.

The results of operative treatment could not be considered satisfactory as a whole. Nearly all the patients showed marked relief for two to six months, but after that time the symptoms gradually returned. There were six patients whose symptoms resembled those given by gallstones. At operation there were found the same general visceroptosis, the presence of bands and membranes and the evidence of local spasm in the stomach wall. In two of the patients the kidney was found to be so mobile that it was considered wise to fix it through another incision in the loin. Apart from this, the operative procedures consisted of division of the adventitious bands and adhesions and, if necessary, removal of the appendix. Later an abdominal belt was ordered. There were five cases resembling carcinoma of the stomach. All five cases presented a short history. At operation, there was no evidence of carcinoma or other organic gastric lesion. Each case, however, showed certain characteristics of the condition of visceroptosis. The results of operation were again not wholly satisfactory.

3. **Paget's Disease.**—Jefferson suggests that Paget's disease is in all probability not an inflammation, but an upset of the internal secretions (especially thyroparathyroid) which control the calcium exchange of the body. The early stages of the disease are characterized by a general decalcification, bringing the affection into line with osteomyelitis fibrosa and to a limited extent with osteomalacia. At the same time an irregular bony proliferation occurs, sufficient in amount to overshadow in the urinary and intestinal excretion the absorbed bone salts. The disease may progress along different lines, presenting itself as an osteomyelitis fibrosa, or having excessive lime deposits, the average case being the mean between the two. Although a general disease, certain bones are more severely affected than others. The disease may be impossible to diagnose while a single bone is affected, though the Roentgen rays will often reveal disease in the early stages in other bones in which it had not been thought to exist. Later, bone salts are deposited in large amounts, this stage being associated with calcium magnesium and phosphorus retention, as has been proved by experiment. During the stage of softening, which may be prolonged and gradual, deformities are produced in all the bones, including the skull. The several varieties of bone change which have been described by various observers of this disease, may be explained by the morphologic differences which the bones present at different stages of the malady, and the different types—the fibrous or the osseous tissue predominating—which it may assume. Benefit may be looked for from the oral administration of extracts of internal secretory glands, though once deformities have occurred they will persist even if the disease is arrested.

6. **Treatment of Wounds by Magnesium Sulphate Solution.**—A saturated solution of magnesium sulphate has given

Morison the best results, both clinically and experimentally. Forty ounces of magnesium sulphate dissolved in 10 ounces of glycerin and 30 ounces of boiling water, and sterilized in an autoclave, makes the solution ready for use. The application is painless, is easily carried out, and the dressings, even in the most septic cases, need only to be changed twice a day. In recent injuries the wound is freely opened up, the bullet, portion of shell, clothing or other foreign body is removed, and the whole wounded surface is swabbed with pure phenol. In the case of fractures, the ends of the bone are treated in the same way, and loose but attached fragments are not removed. The wound is gently packed for twenty-four hours with gauze wrung out of phenol lotion (1 in 20), and antiseptic wool applied as an outer dressing. At the end of this time the wound is dressed; the gauze plug is removed, the wound is syringed out with magnesium sulphate solution, and loosely packed with sterile gauze wrung not too hard out of the same solution, and the whole area of the wound is then covered with a double layer of gauze or lint saturated with solution, over which a piece of jaconet, then cottonwool, is placed, the whole being fixed loosely by a bandage. In the case of wounds of later date, in which sepsis and suppuration are fully established, the treatment by phenol is omitted and magnesium sulphate solution is commenced at once.

Dressings, even in the worst cases, are only changed every twelve hours, thus saving the patient much discomfort and trouble. Morison states that the effect on the wound is striking. In two or three days pus has almost disappeared, sloughs begin to separate, and the whole surface of the wound presents a bright-red color. The granulations never become flabby or edematous, but instead a firm, vascular healing wound is seen. The growth of epithelium from the edges of the wound proceeds vigorously, and the treatment may be continued with advantage until the entire wound is healed. Constitutional symptoms seldom occur, probably owing to the fact that absorption is prevented by the density of the granulations; there is, therefore, no general disturbance of health, there is an absence of lymphatic and glandular infection, and secondary abscesses are almost unknown. The effect in the majority of compound fractures is quickly manifest. Pus rapidly disappears, and the amount of necrosis in comminuted cases appears, as would be expected when infection is diminished, to be materially less.

British Medical Journal, London

November 6, II, No. 2862, pp. 665-696

12 *Nervous Affections of Sixth and Seventh Decades of Life. J. M. Clarke.
13 Wound Infections and Their Treatment. (To be Continued.) A. E. Wright.
14 Operative Treatment of Gunshot Injuries of Nerves. F. Eve and R. S. Woods.

12. See *Lancet*, December 11, Abstract No. 16.

Lancet, London

November 20, II, No. 4812, pp. 1121-1172

15 Bright's Disease in Some of Its Clinical Aspects. S. West.
16 Some Aspects of Cerebrospinal Fever Problem. H. W. Crowe.
17 *Intermittent Fever of Obscure Origin, Occurring Among British Soldiers in France. G. H. Hunt and A. C. Rankin.
18 Bacterial Antagonism, with Particular Reference to Meningococcus. L. Colebrook.
19 Blackwater Fever. R. W. Burkitt.

17. **Trench Fever.**—In twenty-three of the thirty cases studied by Hunt and Rankin, the onset was sudden, in seven more gradual. In the former case the disease began with headache, dizziness and shivering; in the latter with headache and general malaise. The chief symptoms were headache and pain in the back and legs. Headache occurred in every case. It was rarely severe, and in two cases only was it intense; it was usually frontal. Pain in the lumbar region was present in twenty-seven cases; pain in the legs in twenty-six; in no case was it severe. Pain and stiffness in the neck was rare. Abdominal pain occurred in four patients radiating round from the back, and was probably of muscular origin. Dizziness was complained of in the majority of cases, and was an early symptom, but sometimes it persisted for several days. Two patients fainted at the beginning of the illness. Vomiting was rare (four patients only), and was never persistent; in every case it was associated with and probably due to obstinate constipation. Constipation was present in seven patients; diarrhea only occurred once, and then lasted one day. Dryness of the throat was complained of by two patients, but in neither case was there any redness of the fauces.

The most striking feature in the condition of the patients was the absence of any objective signs. There was little constitutional disturbance, and only three patients looked really ill. The temperature was at first raised, then fell to normal, and this fall was followed by one or more relapses. With each relapse there was a recurrence or an aggravation of the symptoms. The pulse rate was not raised out of proportion to the fever. The tongue was sometimes clean, but more often was slightly furred; in three patients it was thickly coated. There was generally some tenderness over the back and legs, but it was always slight; in four patients there was a little tenderness of the abdominal muscles. The heart and lungs showed no abnormal signs, and bronchitis was always absent. The spleen and liver were not enlarged. The urine was free from albumin. In one patient herpes labialis was present. The investigations undertaken with the object of attempting to establish something definite in regard to the etiology of this fever have been disappointing. It is certain that the disease is not contagious in any high degree, for, although no precautions for isolation were taken, no patients in the same ward developed the disease. One orderly in the ward, however, had a typical attack with one relapse.

Bulletin de l'Académie de Médecine, Paris

October 26, LXXIV, No. 43, pp. 465-483

20 Operative Treatment for Abdominal Wounds. E. Quénu.
21 Mixed Vaccines against Typhoid and Paratyphoid Used in Northern African Colonies. E. Sergent and L. Nègres.
22 Roentgen Localization of Projectile in Tissues. (Procédé radioscopique pour déterminer la situation d'un projectile dans les tissus en direction et en profondeur.) P. Pierre.
23 *Rigidity of Wounded Limb as Sign of Impending Gangrene. Prat.
24 *Vaccine Therapy by the Mouth against Typhoid. F. Trémolières, P. Loew and Maillart.
25 Thick Rubber Bands for Improvised Orthopedic Appliances. (Sur l'emploi de caoutchouc dit "lance-pierres" dans la fabrication de quelques appareils orthopédiques de fortune.) Laquerrière and Bourdinière.

November 2, No. 44, pp. 485-508

26 *Epidemic Cerebrospinal Meningitis; Sixty Cases. Capitan.
27 Extraction of Bullets from Bladder by Natural Passages. F. Legueu. See Paris Letter, p. 2101.
28 Assimilation of Fats in Typhoid. (Utilisation digestive des graisses dans la fièvre typhoïde.) R. Mercier and others.
29 Improvised Semi-Rigid Extension Device for Fractures. (Une attelle plombocaoutchoutée extensible pour le traitement des fractures.) Rosenblith.
30 *Further Research on Vaccination against Paratyphoid. J. Lignières (Buenos Aires).

23. **Rigidity as Sign of Impending Gangrene.**—Prat reports four cases of severe wounds in which the limb became rigid in a few hours and gangrene soon followed. His experience indicates that this rigidity is practically cadaveric rigidity, from chemical changes in the muscle tissue, with incipient but extensive gangrene. Prompt amputation saved three of the men, while the others died under conservative operation.

24. **Inefficacy of Oral Vaccination Against Typhoid.**—The research reported with tests for agglutinins, precipitins, deviation of complement and opsonic index all testified anew to the utter inefficiency of antityphoid vaccines taken by the mouth.

26. **Epidemic Meningitis.**—Capitan reports that thirty-four of the forty-five men with meningococcus meningitis recovered under serotherapy, and three of the five with mixed infection. Convalescence was always very long and slow, weakness and anemia persisting for weeks, even when there had been no complications. Treatment was by lumbar puncture, withdrawing as much fluid as possible, usually 20 or

30 c.c. or more, and injecting from 30 to 60 c.c. of the therapeutic serum, repeating this daily, for several days, sometimes skipping a day, and sometimes resuming treatment after an interval. In this latter case 1 or 2 c.c. of the serum were injected into a muscle four hours before the intraspinal injection, and no symptoms of anaphylaxis developed in any instance. As a further adjuvant, a mixture was given of 4 parts calcium chlorid, 2 parts extract of cinchona and 0.1 part spartein sulphate. This supplied a heart stimulant, while combating any tendency to serum sickness.

30. Vaccination Against Paratyphoid in Man and Animals.—Lignières calls attention to the progressive attenuation of virulence in strains of paratyphoid bacilli cultivated in the laboratory. They finally become quite harmless, losing their pathogenic properties, and he warns that vaccines made from such laboratory strains seldom have any prophylactic or curative power. The best vaccines are those made with microbes derived recently from spontaneous and grave cases of paratyphoid infection. He calls it "salmonellosis," referring to the research he published in 1900 in which he apparently demonstrated that certain forms of hemorrhagic septicemia in domestic animals were the work of two species of paratyphoid bacilli to which he gave the name salmonella and pasteurella. The former is of the hog cholera, the latter of the fowl cholera type. His experience with salmonella derived from recent grave spontaneous cases showed that vaccines could be made sufficiently powerful to immunize sheep and pigs by the mouth against fatal infection. He has not been so successful with oral immunization of cattle to date.

Paris Médical

October 9, V, No. 22, pp. 373-388

31 Improvised Apparatus for Mechanical Treatment of Paralysis in the Wounded. A. Léri.
32 Tangential Wounds of the Forearm and Treatment of Their Consequences. Mauclaire and Navarre.
33 Wheel Support for Stretchers. (Un nouveau train de roues porte-brancard pour blessés.) R. Duthoit.
34 *Voluntary Mutilations of Soldiers and Medical Ethics. P. Chavigny.
35 Acute Articular Rheumatism in the Men in the Trenches. (Rhumatisme "des tranchées.") P. Guerrieri and M. Lelong.

34. Voluntary Mutilations to Escape Military Service.—In some recent sensational cases in France the supreme court decided that the medical experts had been mistaken in assuming that certain mutilations had been done by the individuals in question for malingering purposes. In two cases in particular the supreme court reversed without appeal the judgment imposing the death penalty for voluntary mutilation, rebuking the experts on whose testimony the men had been condemned. Chavigny here discusses the ethical questions that arise when one suspects malingering of this type. Several times the majority of the men reaching the ambulance after an engagement were wounded in the hand, and voluntary mutilation seemed the only explanation until it was realized that the men whose legs were not injured reached the hospital quicker, naturally, than those that had to be carried. In some other cases of men accused of voluntary mutilations, roentgenoscopy finally revealed a scrap of shell in the tissues. In any event, the physician should testify only as to the conditions of the wound, the direction, distance, etc., but he can never know positively whether the wound was inflicted by the man himself or an awkward comrade or some coconspirator or some enemy at close range. This can be determined only by the testimony of witnesses. It is useless, unjustified and imprudent for the physician to draw conclusions in such cases. The authorities recognize this, a decree last May emphasizing that the testimony of the medical expert alone is not sufficient for a verdict of voluntary mutilation.

Chavigny knows of some instances in which voluntary mutilation was realized by the man's holding his hand up out of the trench, so that the enemy might shoot it; in other cases the man claimed to have shot his left hand or right foot while cleaning his gun. In still others the men wrapped the part in a wet cloth before putting the bullet through it, thus preventing powder marks.

Presse Médicale, Paris

November 4, XXIII, No. 53, pp. 433-440

36 The Cardiac Neuroses in the Stress of the Campaign. (Guerre et névroses cardiaques.) A. Martinet.
37 Immobilization and Extension Permitting Change of Dressings. (De quelques appareils plâtrés armés permettant les pansements.) J. Abadie.

November 8, No. 54, pp. 441-448

38 *Massive Albuminuria as Sign of Meningeal Hemorrhage. G. Guillain.
39 *Leverage as Aid in Reducing Dislocations. (De la réduction des luxations au levier.) Cochez.
40 Simplified Technic for Electric Treatment of Several Patients at Once. (Dispositif simplifié pour l'électrisation de nombreux blessés.) H. Bordier.

November 11, No. 55, pp. 449-456

41 *Typhoid Fever and Antityphoid Vaccination. L. Rimbaud.
42 *Hemotherapy of Typhus. Esclusc.
43 Thiosinamin in After-Treatment of Wounded Nerves. P. Cazamian.

38. Albuminuria as Sign of Meningeal Hemorrhage.—Guillain replies to Macris' communication, summarized in these columns Sept. 11, 1915, p. 986. He explains that the albuminuria to which he refers is of sudden onset, reaching 2, 10 or 20 gm. per liter in one or two days after the meningeal hemorrhage, and then rapidly subsiding until in a few days the urine may be nearly or quite free from albumin. He has noticed it only in a few cases and found records of only a few cases in the literature. But when this massive albuminuria is encountered in a dubious case, it has much semeiologic importance.

39. Leverage in Reduction of Dislocations.—Cochez uses a crutch with long crossbar at right angles near the foot for applying gradual automatic traction, the crutch rest serving as the lever. This contrivance is proving extremely useful in reduction of recent and old dislocations of the shoulder, elbow, hip joint and knee, as he describes in detail with five illustrations. It does away with the necessity for counter traction, while the reduction proceeds with mathematic regularity under constant control with the dynamometer. Traction equivalent to 60 or 80 kg. (176 pounds) can thus be exerted without jerk or shock.

41. Vaccination Against Typhoid.—Rimbaud deplores that the present technic for vaccination against typhoid does not protect against paratyphoid. This has continued its ravages, while typhoid has been nearly stamped out in the French army in the region where he is stationed. There were 222 cases of typhoid in the nonvaccinated, and typhoid bacilli were cultivated from the blood in 50.9 per cent., but paratyphoid bacilli were found only in 10.3 per cent., while the latter bacilli were found in 35 per cent. of the 434 vaccinated who developed a typhoidal condition. True typhoid bacilli were found in 19 per cent. of the 21 vaccinated but once; in 11.6 per cent. of the 146 vaccinated three times, and only in 6.8 per cent. of the 145 fourfold vaccinated.

42. Hemotherapy in Typhus.—Esclusc made intravenous injections of blood taken from convalescents eight or ten days after defervescence, and reports that the severe typhus showed a prompt change for the better in the three patients given this treatment. The technic was similar to that for ordinary transfusion of blood, only that a little sodium citrate was mixed with the blood. The cases selected for this treatment were extremely grave, the prognosis unfavorable. The experiences related demonstrated that after the organic reaction is exhausted by the severity of the typhus intoxication, the hemotherapy is unavailing. There is not much chance of success after the tenth day. The maximum amounts injected were 30 c.c. of blood fractioned in three doses during the twenty-four hours, a total of six injections in the course of three days in one case and three injections in four days in the other.

Archiv für Gynaekologie, Berlin

CIV, No. 3, pp. 393-579. Last indexed August 28, p. 833

44 *Causes Influencing Presentation at Delivery. (Die Ursachen der Kindeslagen.) F. Schatz.
45 *Functioning of the Tubular and Glomerular Systems in the Kidney during Pregnancy. (Untersuchungen über die Nierenfunktion bei gesunden und kranken Schwangeren und Wöchnerinnen.) P. Werner.

46 *Symphysiotomy or Cesarean Section. (Symphysiotomie oder Kaiserschnitt.) P. Hüssy.
47 Medicolegal Aspects of Perforation of the Living Child. (Perforation und Strafgesetzreform.) H. Lieske.

44. Causes that Influence the Position of the Fetus.—This long article is the second which Schatz has published on this subject. It reports the results of extensive clinical research which explain the mechanism of the changes of position of the fetus, the influence of the position of the uterus, and other factors. The findings on repeated examination of pregnant women near term, reclining or erect, are given in 140 tables. The influence of the sex and size of the fetus, of the time of day, of the contractions of the uterus, influence of preceding deliveries, and the way in which the fetus changes its position and presentation are all discussed in detail. The efforts of the fetus to stretch its limbs seem to be the main cause of its changes of position. He found that the fetuses displayed as marked characters as in extra-uterine life. Some were nervously alert and responded promptly and vigorously to altered conditions, while others were torpid and sluggish and seemed to be governed only by the law of gravity, thus getting into the breech presentation attitude and keeping it.

45. Tests of Kidney Functioning During Pregnancy and the Puerperium.—Werner gives the conclusions from repeated testing of the work of the kidneys in 28 women with puerperal eclampsia, including 23 primiparas. The eclampsia was not of the fulminating type and none of the women died. Ten other women examined had pregnancy kidney, quite severe in 3, and terminating in eclampsia. In 5 other cases nephritis developed in the course of a pregnancy. Nine other women presented pregnancy glucosuria, but tests of kidney functioning showed nothing abnormal. Seven other women had pyelitis, but the kidney functioning seemed normal as the tubular system in the sound mate was able to do all the needed work. When both kidneys were affected, the tests showed manifest functional impairment. The tests were applied also to 15 women who had been delivered under a general anesthetic (Billroth mixture) on account of myomectomy, cesarean section or laparotomy for other cause. Eight other women had valvular defects. In addition to this clinical material, the tests were applied to 20 healthy women pregnant for the first time and approaching term, 15 primiparas, 8 multigravidas, and 8 multiparas. The tests were the usual lactose, iodin and phenolsulphonephthalein technics. Necropsy in 4 cases confirmed the findings of the tests.

The conclusions drawn from this extensive material are that in healthy pregnant and parturient women the functional capacity of the kidneys is good but not quite up to standard, although the tubuli seem to functionate periodically a little more than under normal conditions. After operative deliveries under general anesthesia, both the glomeruli and the tubules show slight but transient impairment of function. Compensated valvular defects showed a good response to the iodin and phenolsulphonephthalein tests, but the lactose test revealed some damage of the kidneys. With pregnancy glucosuria, the glomerulus functioning was evidently impaired, while the tubuli behaved normally. Four of the 6 pregnant women with pronounced goiter responded to the lactose test with glucosuria, indicating weakness of the glomerulus system while the tubule function seemed intact. Both systems showed severe impairment in the cases of nephritis, but the tubular functioning soon recuperated after delivery while the glomerular functioning showed scarcely any influence from this.

The lactose and iodid tests are thus important aids in distinguishing between actual nephritis and mere nephropathy, and they aid in the prognosis with the latter, as the form with vascular disturbances manifests a marked tendency to become chronic after the termination of the pregnancy. The kidneys in eclampsia responded to the tests the same as the "pregnancy kidney," namely, the response to the lactose test was as in normal conditions, but the response to the iodid test ranged between wide extremes, the elimination of the iodid being complete in thirty hours in two cases, in forty-five hours in ten, and not until after the sixtieth hour in two.

46. Symphysiotomy or Cesarean Section.—Hüssy has delivered eight women by Frank's subcutaneous method of symphysiotomy and is convinced that it must be regarded as progress. It takes the place of perforation of the living child with a true conjugate down to 7 cm. and spontaneous delivery not entirely out of the question. It allows waiting as long as the fetal heart sounds are normal. It does not compete with extraperitoneal cesarean section, as the latter is indicated when there is manifest infection or spontaneous delivery is out of the question. Subcutaneous symphysiotomy is not especially dangerous, although thrombosis seems particularly imminent with it and the damage to the soft parts may have serious consequences.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 6, XLV, No. 45, pp. 1409-1440

48 *Treatment of Sterility in Women. (Behandlung der weiblichen Unfruchtbarkeit.) E. von Fellenberg.
49 Experiences in a German Base Hospital. G. Hotz.

48. Treatment of Sterility in Women.—Fellenberg is convinced that the internal secretions have an important share in preventing conception in some cases. Inhibition of the functioning of the sound ovary from a cystic ovary was apparently responsible for the sterility in one of his cases, as the long childless couple had a child born within one year after the cystic ovary had been removed. Such inhibition used to be ascribed to nervous influences, but now we explain them by internal secretions, and this permits the hope of effectual treatment of sterility from this cause. The genital organs in particular are under the control of the ductless glands, and the secondary sexual characters include not only those of the external genitals and the breasts, but also the changes in the birth tract. An infantile condition of the genital organs is generally associated with a chlorotic anemic habitus. It is possible that only single segments of the genital organs may fail to develop normally. It is also possible that the changes occurring at puberty may exhaust the organism for a time or permanently, and that the ovaries then are unable to functionate normally. By giving ovarian extract, the missing stimulus may be supplied and conditions gradually right themselves, permitting conception in time. Bab in 1909 strongly commended this treatment, supplemented with lecithin to enable the mother to supply the fetus' need of lecithin. He applied measures also to increase the supply of blood in the genital organs. The ovarian treatment apparently exerts a local action on the ovaries themselves, as evidenced by more regular menstruation. It might also influence growth processes in the uterus and tubes, and thus improve the hypoplastic infantile conditions. A tonic action on the general health can usually be relied on. Bab advises discontinuing the ovarian treatment after conception has occurred.

Fellenberg has found treatment of sterility along these lines effectual in a number of cases. In one particularly instructive instance pulmonary embolism and pleurisy had followed the first childbirth and there had been lassitude and headaches during the seven years since with no conception. The entire system had evidently been exhausted and the genital functions in particular. Under ovarian medication and courses of spa treatment, with hot vaginal douches and sitz baths, the general health improved and the genital functions became normal. The woman now has four children.

Thyroid treatment may be indicated in certain cases of sterility. Among the signs of thyroid insufficiency are the abnormally rapid coagulation of the blood, relatively small neutrophil and high lymphocyte count; such women are inclined to be nervously irritable, with a tendency to spastic constipation and sick headache. Sehrt goes so far as to declare that an infantile uterus always suggests thyroid insufficiency. With hypofunctioning on the part of the thyroid conception may occur, but abortion follows almost at once. Fellenberg has given thyroid treatment for habitual abortion, and it has been successful in a number of instances. The blood count must be supervised with special care during the thyroid treatment, examining the blood picture anew every two weeks at least. In the cases in this category,

women long sterile became pregnant, the tendency to spastic constipation subsided, and the general health improved, while the blood picture returned to normal. Weil has also noted progressive improvement in the functioning of the genital organs under thyroid treatment. Gross and Tandler have reported that the thyroid was found abnormally small in persons who had been castrated. Others have called attention to the elective dilatation of the vessels in the thyroid and the lower pressure in them under the influence of ovarian treatment. There is thus much evidence on hand testifying to the reciprocal influencing of the thyroid and the genital organs, and this fact can be utilized to stimulate defective functioning of the latter.

Deutsche medizinische Wochenschrift, Berlin

October 14, XLI, No. 42, pp. 1237-1264

50 War and the Public Health. (Krieg und Gesundheitsfürsorge.) A. Gottstein. Concluded in No. 43.
51 Principles and Technic for Constructing Artificial Limbs, with Special Regard to the Supporting Points and Suspension. J. Dollinger. Concluded in No. 43.
52 Simultaneous Vaccination against Typhoid and Cholera. L. v. Liebermann and D. Acel.
53 *Technic for Neurolysis. A. Stoffel.
54 *Heliotherapy at the Field or Base Hospitals. (Sonnenbehandlung im Felde.) C. Deutschländer.
55 The Fight against Venereal Disease among the Troops. (Bekämpfung der Geschlechtskrankheiten bei der Truppe.) L. Halberstaedter.
56 Chemical Diagnosis of Acute Benzol Poisoning by Joachimoglu's Technic. E. Schmitz.
57 *Occurrence of Conception in Relation to Ovulation. (Wann ist der Beischlaf befruchtend?) P. W. Siegel.
58 Research on Artificial Parthenogenesis is the Road to Discovery of Means to Promote Regeneration of Tissues. (Ueber stimulierende Einwirkungen auf Zell- und Geweberegeneration.) M. Popoff.

53. **Neurolysis.**—Stoffel mentions among other technical points that regeneration of a nerve proceeds much more actively and promptly when the nerve is completely relaxed. He decries any attempt to resect cicatricial tissue involving a nerve until after each of the nerve fibers has been separated from the mass and isolated into sound tissue above and below. By this means the intact strands of true nerve tissue can be loosened from the scar tissue and saved unimpaired. The scar tissue once excised, the nerve fibers, or what is left of them, are collected together into a single strand again and something to serve as a sheath is wrapped around them. He prefers for this calf arteries or calf peritoneum, hardened in formaldehyd. Seven cases are described in detail to illustrate the advantages of exploring the cicatricial tissue in this way to recognize and save every scrap of true nerve fiber tissue.

54. **Heliotherapy for the Wounded.**—The beds were placed in an abandoned greenhouse, and Deutschländer reports that severe wounds healed unusually quickly under the heliotherapy thus rendered possible, as he describes in detail.

57. **Date of Conception in Relation to Menstruation.**—Siegel charts the data obtained by comparing the date of a soldier's brief furlough with the pregnancy of his wife. His chart is based on 100 cases. The data confirm the assumption of a close time connection between the bursting of a follicle and conception.

Münchener medizinische Wochenschrift, Munich

November 2, LXII, No. 44, pp. 1489-1524

59 *Mechanism of Sudden Death with Angina Pectoris. (Zur Erklärung des plötzlichen Todes bei Angina pectoris.) H. E. Hering.
60 Artificial Limbs for the Wounded. (Aufgaben und Wege für den Hand- und Armersatz der Kriegsbeschädigten.) O. Witzel; (Ueber Prothesen bei Amputationen des Armes.) Biesalski; (Prothesen aus Weissblech.) v. Baeyer; (Kautschukschaum zur Herstellung künstlicher Glieder.) C. S. Engel.
61 Fatal Air Embolism during Insufflation of Kaolin. (Tödliche Luftembolie durch Bolusinsufflation mit Nassauers Siccator.) A. Hamm.
62 Autogenous Vaccine Therapy of Furunculosis. (Zur Impfbehandlung der Furunkulose.) H. L. Heusner.
63 *Treatment of Recent Gonorrhea by Prolonged Very Hot General Bath. (Die Fiebertherapie der Gonorrhoe.) O. Weiss.
64 Impairment of Vision in Active Military Service. (Ueber Blendungserscheinungen im Felde.) M. Zade.
65 Roentgen Stereophotography for Estimating Anatomic Distances. (Ueber die Anwendung der Stereophotogrammetrie des Röntgenbildes in der feldärztlichen Tätigkeit.) A. Hasselwander.
66 Localization of Foreign Bodies. (Vereinfachung zur Tiefenbestimmung von Fremdkörpern.) T. Christen.
67 Sexual Abstinence. (Bemerkungen über die von der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten unternommene Sammelforschung in betreff der sexuellen Abstinenz.) L. Löwenfeld.

59. **Ventricular Fibrillation Main Factor in Sudden Death in Angina Pectoris.**—Obstruction of the coronary arteries, in connection with other factors, is liable to induce ventricular fibrillation. The predisposing factors are the size of the artery, the functioning of the area it nourishes, general anesthesia, hemorrhages, and trauma in the vicinity. The direct exciting factors may be listed in order of importance as the local ischemia, local action of toxins, carbon dioxid in particular, and, finally, the heterotopic impulse, that is, the abnormal impulse to uncoordinated contractions of the fibers of the ventricle walls. The abnormally located impulse for the wave of contraction is the immediate precursor of the fibrillation, for we know that this is the consequence of the highest degree of heterotopic impulse production *(heterotope Reizbildung)*. The direct actual proof that the sudden death in angina pectoris is the result of ventricular fibrillation can be supplied only by electrocardiography. And as death occurs instantaneously, it may never be possible to apply this method of examination unless chance intervenes. But if this testimony could be once produced, it would demonstrate that the individual does not die from paralysis of the heart but from the direct opposite, the excessive production of impulses. This knowledge would give us the clue to prevention and treatment, as we would seek to ward off everything that might favor heterotopic impulse production. Even if we knew only that angina pectoris is a symptom of heart disease, the extreme suddenness of death, without anatomic findings, could be explained only by fibrillation of the ventricles. But we already have data which show that angina pectoris occurs only when there is temporary ischemia of the heart, and we know by experiments on animals that this ischemia is liable to precipitate fibrillation of the ventricles, and also that the ischemia predisposes the heart to fibrillation. Hence even the pathogenesis of angina pectoris sustains the assumption that death is the result of ventricular fibrillation *(Herzkammerflimmern)*.

63. **Artificially Induced Fever Temperature in Treatment of Gonorrhea.**—As the gonococci are killed so easily by temperatures of only 42 C. (107.6 F.), attempts have often been made to sterilize the urethra by application of heat. But the constant influx of blood keeps the temperature below the required degree of heat, and all such attempts have proved futile to date. Weiss solves the problem in another way, by keeping the patient in a hot bath until the entire body is heated to the required fever temperature. In eleven cases of recent gonorrhea he had the men take a hot bath forty or fifty-five minutes long, with the temperature of the water gradually increased from 40 to 43.5 C. (104 to 110.5 F.). In one case the body temperature was raised to 42.6 C. (108.5 F.) in a forty-minute bath, and the gonococci disappeared entirely at once. In the other cases the body temperature did not go so high, but the vitality of the gonococci was evidently reduced and under a few local injections they soon all disappeared.

Hospitalstidende, Copenhagen

November 10, LVIII, No. 45, pp. 1151-1174

68 *Hereditary Hemorrhagic Telangiectasia (Osler). E. Gjessing. Concluded in No. 46.

68. **Hereditary Hemorrhagic Telangiectasia.**—Gjessing gives an illustrated description of a case of this typical affection, as described by Osler, in a man of 51 and of a second and third case in his son and his daughter. This makes the nineteenth family on record in which this affection has occurred in two or more generations, and he gives a summary oversight of the nineteen families. In his cases the tardy angiomas were familial; they developed like an eruption; they were located exclusively in the face and

adjoining mucosa, and some of them—mostly those in the nose—bled spontaneously, or after trauma. Sometimes the hemorrhages were quite profuse, but there were no signs of hemophilia.

Hygiea, Stockholm

LXXVII, No. 19, pp. 1005-1084

69 *Diagnostic Importance of Occult Hemorrhage in Gastro-Intestinal Tract. (Om smygande blödningar inom matsmältningskanalen.) L. Wolff.

69. **Occult Gastro-Intestinal Hemorrhage.**—Wolff gives the detailed history of the study of occult gastro-intestinal hemorrhage to date, and emphasizes the diagnostic importance of positive findings provided no meat has been eaten for the few days preceding. He emphasizes further the marked tendency to heal of a solitary gastric ulcer, which renders persisting occult hemorrhage so significant. He also comments on the necessity for strict regulation of the diet after operations on the digestive tract. He regards testing for occult hemorrhage as an indispensable routine procedure in all dubious cases, at least in all dubious stomach cases. In his own recent practice the positive and also the negative findings in a number of cases gave the clue to the real source of the trouble, confirmed by the later course of the cases. The value of the test was shown particularly in a case of severe anemia with hemoglobin below 50, but no symptoms on the part of the digestive tract except occult hemorrhage. In another case there was intense cardialgia and gastric ulcer was assumed, but no benefit followed treatment on this basis and no occult hemorrhage could be detected. On this negative finding, treatment for syphilis was instituted and prompt recovery followed. In another case anemia and nervous symptoms on the part of the stomach were assumed at first to be a recurrence of a gastric ulcer which had been successfully treated ten years before. The constantly negative tests for occult hemorrhage apparently excluded gastro-intestinal trouble, and under general tonic measures health was soon regained. In a case of chronic hyperacidity with pains, vomiting and emaciation, the absence of occult bleeding excluded cancer, and no trace of malignant disease was found at necropsy. In gastric ulcer cases the improvement under treatment could be followed in the subsidence of the occult hemorrhages. Occult hemorrhage also revealed in some cases the presence of malignant disease in the stomach before there was any tumor or debility, and in many dubious cases turned the scale one way or the other, and always reliably, according to Wolff's experience to date.

Norsk Magazin for Lægevidenskaben, Christiania

November, LXXVI, No. 11, pp. 1305-1472

70 *Three Cases Illustrating Connection between Diabetes Insipidus and Functioning of the Hypophysis Cerebri. K. Motzfeldt.

71 *Action of Hypophysis Extracts on Diuresis, Blood Pressure and Nitrogen Metabolism in Fifteen Relatively Healthy Subjects. (Studier over hypofyseekstrakters virkninger, — særlig paa diurese, blodtryk og N-Omsætning, hos relativt friske mennesker.) K. Motzfeldt.

72 *Orthostatic Albuminuria and Its Relation to Nephritis. P. F. Holst.

70. **Diabetes Insipidus and the Hypophysis Cerebri.**—Motzfeldt's article is an able summary of the literature on this subject to date, with detailed reports of three cases of diabetes insipidus. In none of them could anything abnormal be discovered in the hypophysis, but a number of symptoms pointed to insufficiency of the posterior lobe of the pituitary body. Marked benefit followed treatment with an extract of this lobe. From five to seven beef pituitary glands had to be eaten at a time, Motzfeldt says, to obtain an effect even approximating that of one-fourth of a syringeful of the commercial extract.

He knows of no case on record in which pituitary treatment was applied so systématically and so perseveringly as in one case here described. No other measures had any effect except that opium slightly reduced the diuresis, probably by the diminished thirst. This patient is a trained nurse of 42. The diabetes insipidus developed in 1913, with diuresis of from 8 to 10 liters. She increased 20 pounds in weight, and menstruation ceased, with increasing lassitude. The intake and output of fluids, the specific gravity, the proportional elimination of chlorids and of nitrogen and the total amount of the latter eliminated are recorded day by day during three months under treatment with an extract of the posterior lobe of the pituitary body. The benefit from it was manifest; less urine was voided and the patient felt better. Treatment was then continued with pituitary substance obtained fresh from the slaughter-house each day. The beef glands were sliced and cooked or eaten raw or dried. She thus took from two to seven each day and finally took seven every second evening on retiring. Under this treatment she sleeps quietly all night, is not tormented by thirst, has lost 2 pounds, and feels perfectly well, while menstruation has returned. One of the tables shows the effect of hypophysis treatment on the concentration of the urine. It was given every two hours, and the urine was examined at corresponding intervals. The density ran up at once from 1,004 to 1,014 and reached 1,017 after the fifth subcutaneous injection of 0.5 c.c. of the extract.

The extract of the anterior lobe did not seem to influence the diuresis, and neither extract seemed to affect the elimination of nitrogen. In the second case, the patient a woman of 23, the diabetes insipidus developed after chicken pox at the age of 10, and had persisted for thirteen years. The general aspect suggested Lorain's "hypophyseal dystrophy." The third patient was also a woman, now 39. Cerebrospinal symptoms of syphilis during the last four years suggest that the diabetes insipidus, installed for the last six months, may owe its origin to some gummatous process in or encroaching on the posterior lobe of the pituitary body. The visual field was normal in all the cases, and roentgenoscopy of the base of the skull revealed nothing abnormal. Motzfeldt suggests that cases of primary polydipsia should also be examined for pituitary insufficiency.

71. **Influence of Hypophysis Extracts on Metabolism.**—In the fifteen relatively healthy persons tested, an extract of the posterior lobe reduced the output of urine and increased its concentration, but the elimination of nitrogen did not seem to be affected.

72. **Postural Albuminuria in Relation to Nephritis.**—Holst examined postmortem the kidneys of a youth of 16 who had had typical orthostatic albuminuria during the last five or six years but had beeen otherwise normal until he contracted galloping tuberculosis of the lungs. Not a trace of inflammation could be discovered in the kidneys, notwithstanding the years of pronounced postural albuminuria. He cites further a number of clinical cases all confirming the same, namely, that this postural albuminuria may in some cases be of purely functional nature. Hence it is irrational and may be positively injurious to treat a person with postural albuminuria as if he had actual kidney disease. He reports from his hospital service ten cases in which the orthostatic albuminuria was a chronic condition but no tube-casts were ever found in the urine. Several of these patients had been sent to the hospital for assumed nephritis and had been treated for this. In five other cases there was pronounced orthostatic albuminuria but at the same time the presence of tube-casts, high blood pressure and increased area of dulness over the heart indicated nephritis. In the first group there seems to be no tendency to actual nephritis, but such patients generally need tonics and general building up to aid them in outgrowing the tendency to postural albuminuria. Of the fifty persons with postural albuminuria he has encountered, two have died of tuberculosis.

Ugeskrift for Læger, Copenhagen

October 28, LXXVII, No. 43, pp. 1673-1706

73 Acute Heart Block; Three Cases. C. Lungsgaard.

74 Habitual Bradycardia and Epileptiform Attacks. A. Faber.

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75 Albuminuria Developing during Course of Acute Otitis Media; Thirty Cases. (Om Albuminuri under Forløbet af den akute Mellemøresuppuration.) R. Lund.

76 Chicken Lice as a Stationary Parasite of Man. (Hønsemiden — Dermanyssus gallinae—som Parasit hos Mennesket.) B. Pontoppidan.